

AUGUST 13, 1936

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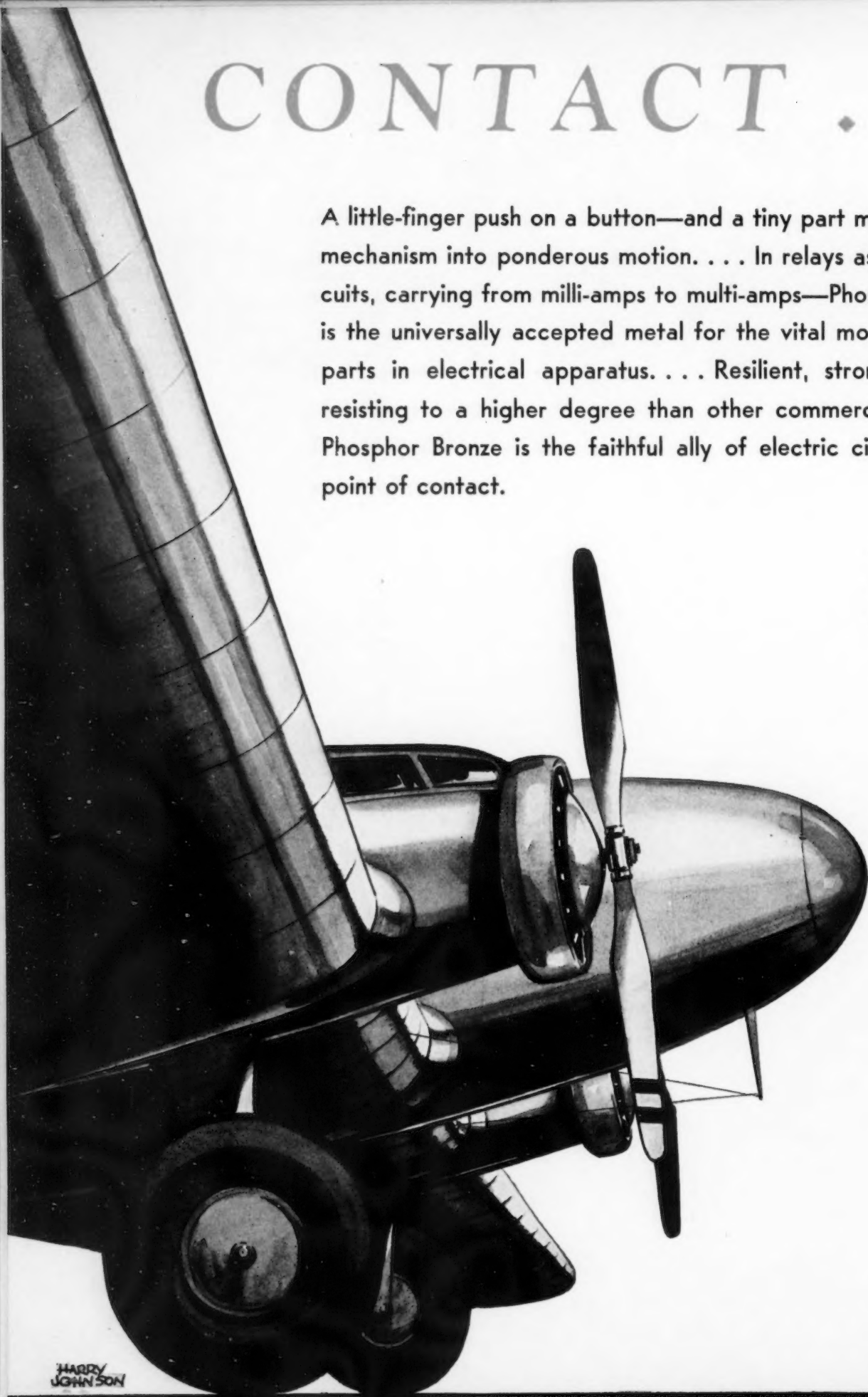


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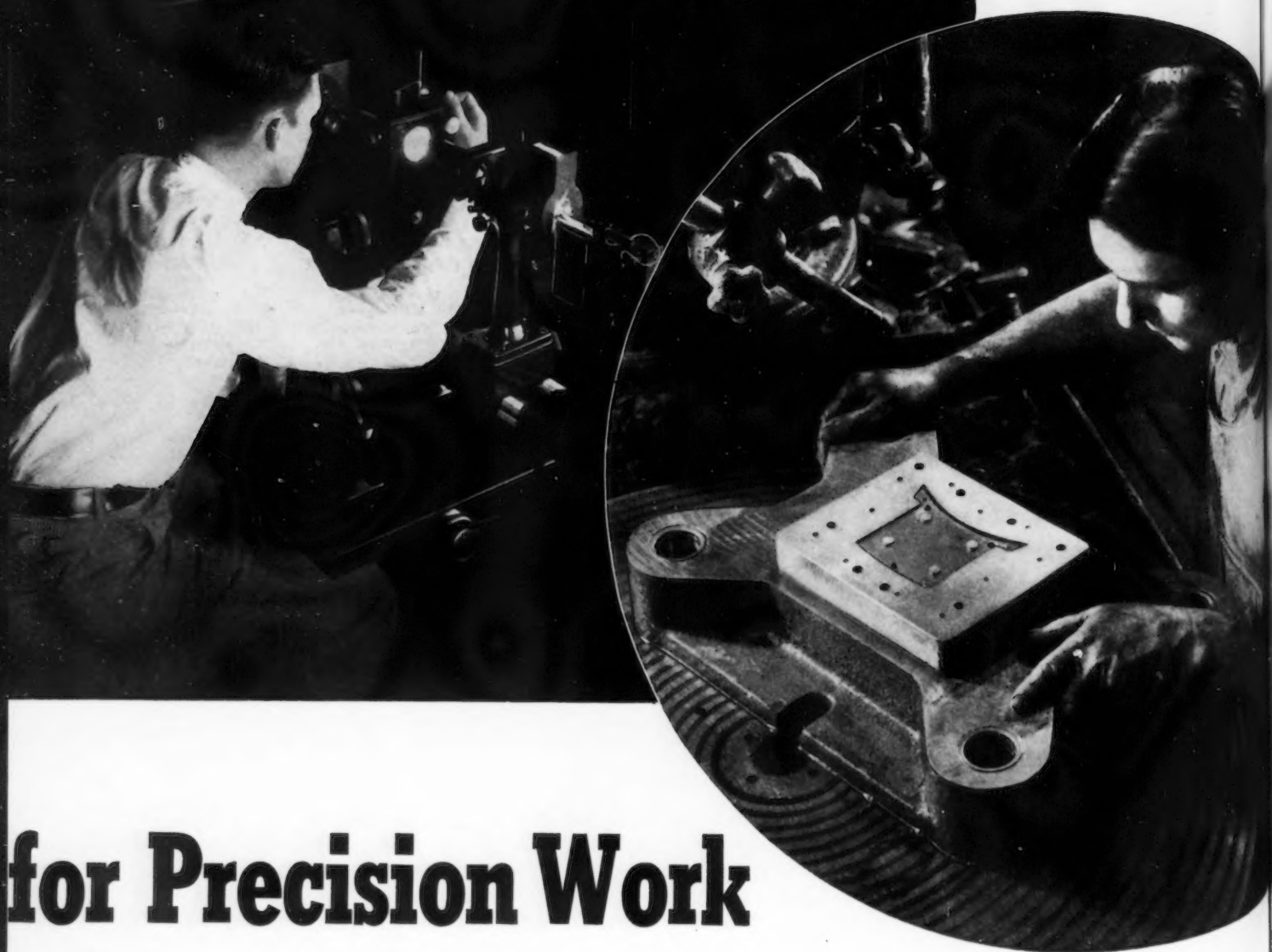
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BETHLEHEM STEEL COMPANY

BETHLEHEM *Die Steels*

... THE IRON AGE ...

AUGUST, 13, 1936

ESTABLISHED 1855

Vol. 138, No. 7

Largerphobia

HAVE you a psychoanalyst at your disposal? If so, you might ask him what is back of the "largerphobia" which today is disturbing the peace of all nations.

Largerphobia is the mental twist which makes people hate and fear that which to their minds is larger or better than themselves. It is the fruition of the "inferiority complex."

It makes people want to bring everyone else down to their level.

The Administration is playing upon this popular note in its philosophy of "down with big business" and the redistribution of wealth. As if wealth would ever stay redistributed!

John Lewis is playing upon this popular note in his campaign to put skill and experience in the minority and crude labor in the majority through mass unionization of industry.

It's the "leveling off process." "Let's put everybody on a common level, regardless of skill, training or natural aptitude."

It reminds us of a fable.

Once upon a time there was a country of extremely varied topography—mountains, hills, valleys.

The inhabitants complained of the difficulty of raising crops on such a saw tooth terrain. "How much better it would be if things could be leveled off a little, if we would cut off the tops of our high mountains."

So an ingenious inventor constructed a leveling machine to take off the tops of the mountains.

It worked to perfection. The one drawback was that they could not stop it from working after it had removed the high peaks. It insisted upon continuing until the whole country was a level plain.

To make a long story short, the inhabitants finally found that all mountains and hills were gone and that their country was a perfectly level plain.

"Now we can raise wonderful crops," they said.

Much to their surprise, they found that no irrigating streams could be made to flow upon a perfectly level surface. The country dried up and all of the inhabitants starved to death.

Moral—Beware of putting a leveling machine to work lest it may not be able to stop when it gets to *your* altitude.



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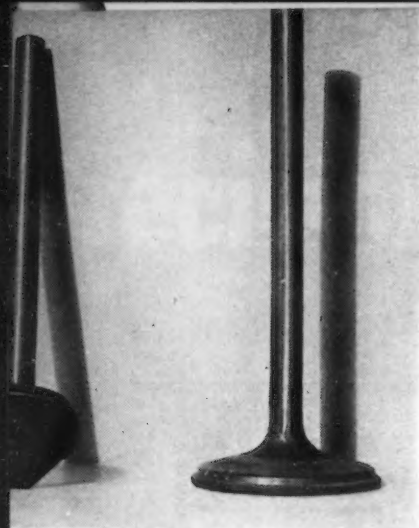


FIG. 1—Manufacture begins with the forging of the stock to shape. The stock after the "gathering" operation is shown at the left.

STEPS in the production of automotive poppet valves, from the initial gathering and forging of the round stock to the comparator inspection of the finished product at the plant of a large producer, are outlined in this article. Special fixtures have been developed to facilitate production in the various manufacturing operations.

o o o



IN the early days of the automobile industry, poppet valves were accepted as the most efficient means of handling the incoming charge of gas and air and expelling the burned gases. This type of valve is efficient and is still used. Valves give the motorist very little trouble today, but that was not true of the early valves which broke frequently and burned out often. These defects have been overcome, chiefly through refinements in alloy steels and the methods of heat treatment.

The problem today is not one of design, but is one of production, for motor valves must be made accurately in very large lots. Not the least of the problems confronting the valve manufacturer is that of cost, for valves both for new and

replacement purposes must be sold in a highly competitive market. At the plant of the Thompson Products Co., Cleveland, one of the largest manufacturers of automotive valves in the world, production methods in use today are the result of some 30 years' experience. Although the company makes automotive valves for all types of internal combustion engines, the present article deals only with the type of valves used in popular makes of automobiles and trucks.

The first step in valve manufacture is to forge the stock to shape. Two operations are involved. At the left in Fig. 1 is shown a valve forging after the "gathering" operation—the first step in forming the head. At the right is shown a valve after it has been forged. A gathering machine in operation is shown in Fig. 2. These machines,

made under the Guerne patents, operate electrically. In this instance the operator places a piece of round stock $\frac{3}{8}$ in. in diameter and 14 in. long in position in the machine where it is fed automatically into a die which controls the head shape. As soon as the stock touches the die, electrical contact is made. Operation of the machine is such that the work "hesitates" momentarily until the resistance of the electrical current, 3 volts, 12,000 amp., heats the stock until it attains the proper forging temperature, but not hot enough to injure the structure of the steel. Then, as the automatic feed forces the stock toward the die, the head is formed or gathered as shown at the left in Fig. 1. Referring again to the machine shown in Fig. 2, as soon as sufficient stock has been gathered the feed stops, the work

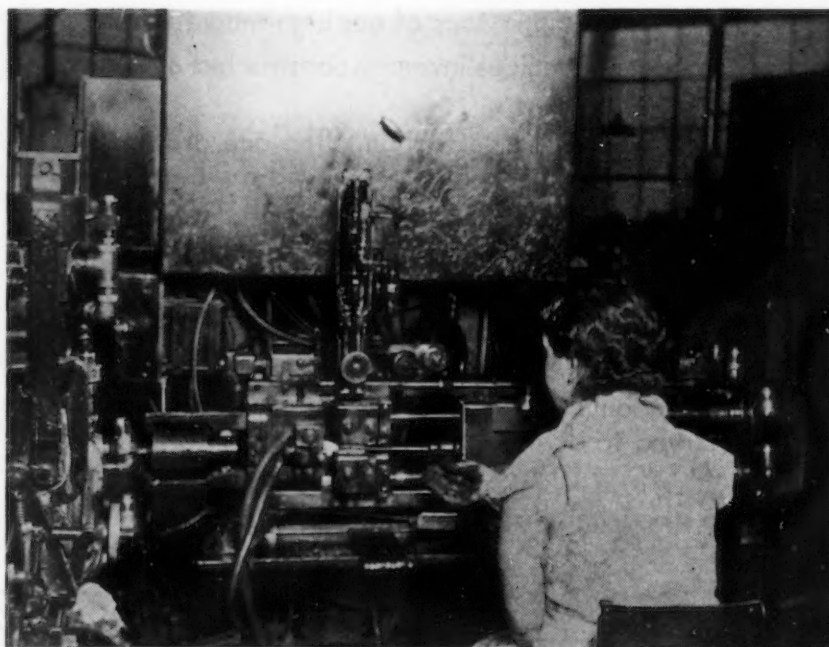


FIG. 2—Stock is fed automatically into the "gathering machine"; before being formed or gathered it is heated electrically.

VALVES ANNUALLY.....

is released automatically and the operator throws the piece into a chute which conveys it to the forging press on the floor below.

A partial view of one of these machines is shown in Fig. 3. It is a Manville bolt header with dies adapted for valve forging. The hot valve as it comes from the floor above is placed in the roller conveyor shown on the extreme right of the machine. The action of the rolls moves the valve forward so that it feeds down the inclined chute, at the end of which it is gripped by mechanical fingers and carried downward where the head is formed between dies. Operation is automatic and results in the form shown at the right in Fig. 1. Due to the fact that the gathering and forging operations are performed at one heat, the forging expense is reduced materially. By

installing the gathering machines on a balcony in the forging department and relying on gravity to transport the hot work, the operation is carried out at one heat for periods involving long production runs. Both the gathering and forging machines are, of course, equipped with dies for taking care of a variety of valve sizes and styles.

The next operation consists of heat treating to give the steel the proper texture. Heat treating furnaces are both gas and electrically heated. As the valve is liable to warp slightly during heat treatment a straightening operation is necessary before machining. With the huge production runs necessary in valve making, ordinary straightening operations would consume too much time and so a semi-automatic method is used. The valves are fed through a roll threading

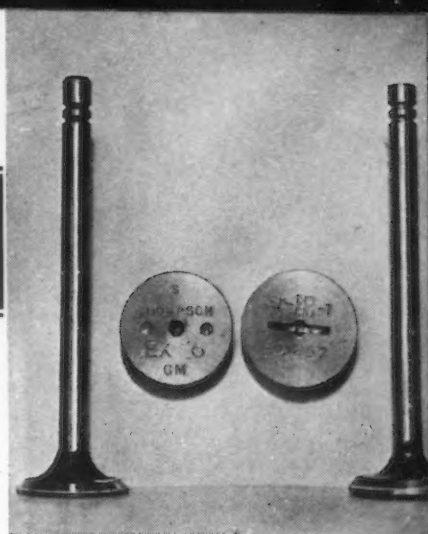


FIG. 4—End of valve stems are grooved for holding the valve retainers, and the valve heads are drilled or slot milled to facilitate seat grinding.

By FRED. B. JACOBS

machine fitted with dies to accommodate both the head and the stem. One pass through the dies straightens the work effectively, leaving it in the correct shape for the first actual machining operation.

Next it is necessary to provide an accurate locating point for subsequent machining operations. This is done by grinding the stem in a centerless grinder fitted with a carbide of silicon wheel, 24 in. in diameter, 6 3/4 in. face, 36 grit, medium grade operated at approximately 5000 ft. per minute. While it might be termed a rough grinding operation it leaves the stem round and straight, which is the condition sought. Approximately 0.010 in. is removed in this operation. Because of the valve head the work cannot be fed through the machine and thus the operation falls in the category of so-called shoulder grinding wherein the part is placed on a work-rest and the feed and the grinding wheels of the machine brought together. A stop governs this motion so that once the machine is set up it will grind several hundred valves

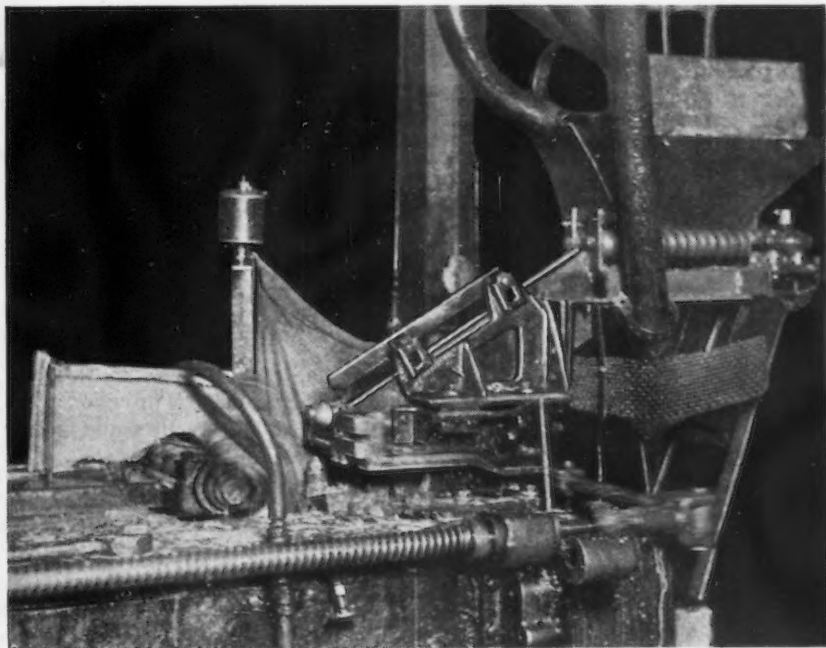


FIG. 3—Bolt header equipped with dies to produce the valve forging shown at the right in Fig. 1. Both gathering and forging operations are performed at one heat.

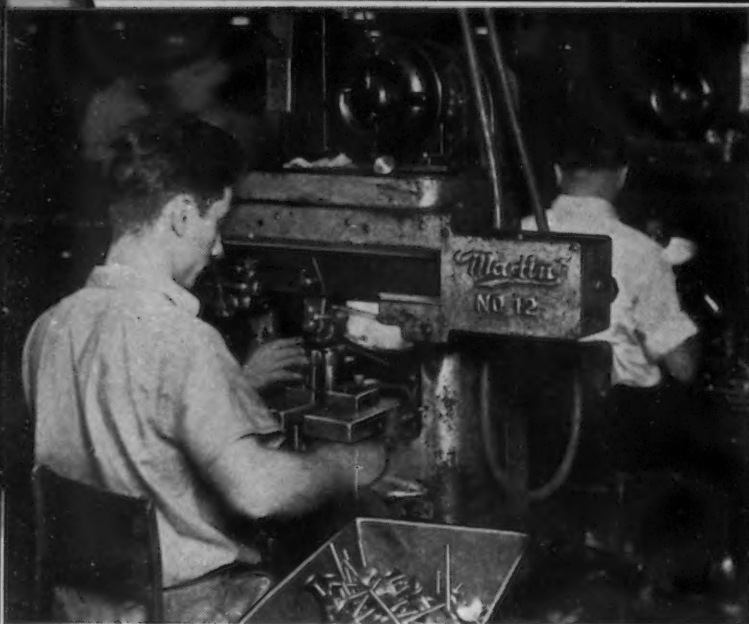


FIG. 5—Valve heads are marked without distortion by passing them under a roller provided with raised characters.

without adjustment to compensate for wheel wear.

Following this grinding operation the parts go to Acme automatic screw machines where they are located by the ground stem for turning the head diameter and the seat. Next the end of the valve must be machined so that the stem end is the correct distance from the seat. This operation is done in a hand-operated screw machine, the work being fed against a fly cutter.

Fig. 4 shows that the ends of the stems are provided with grooves



FIG. 6—Grinding the stem on cylindrical grinder. The operator gages one valve while another is being ground.



FIG. 8—Stem tips of valves heated in this equipment by an oxy-acetylene flame.

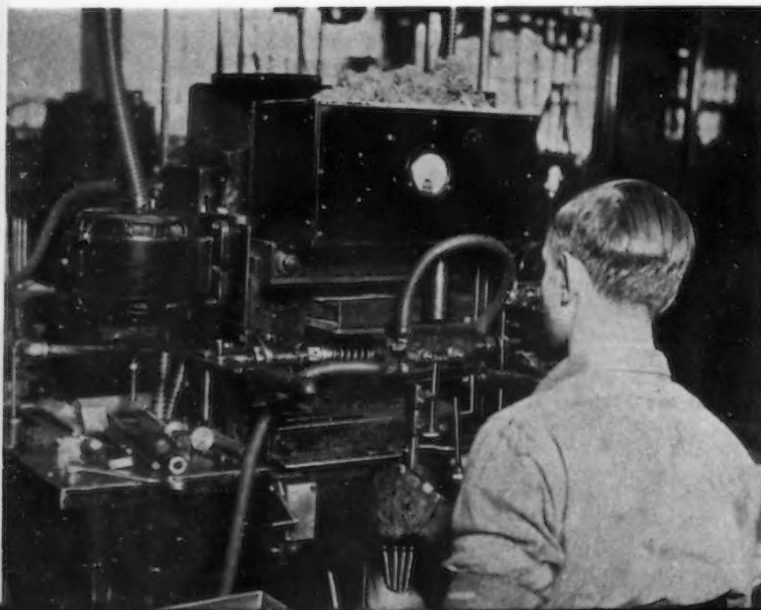


FIG. 7—Many valves are hardened in this machine, which incorporates "electric eye" heat control. The stem is held between copper jaws that serve as electrodes.

for holding the valve retainers. These slots are cut in a No. 00 Brown & Sharpe automatic screw machine. Fig. 4 also shows that the valve heads are provided with holes or slots to facilitate grinding the valves in their seats. The operation of drilling the holes or milling the slots next follows. The slotting operation is simple and needs no comment. If the valves have drilled heads, the drilling is done in a drill press fitted with a double head so that the operation is a multiple one, the work being held in a jig.

It is of course necessary to provide identification markings on the valve heads. This operation is performed, as shown in Fig. 5, in a No. 12 Martin marking machine. The work is held in a special fixture and fed automatically under a roller provided with raised characters. This method results in legible markings made at slight expense, and as the valve is not subjected to a blow there is no danger of distorting it.

The heads next are chamfered in hand screw machines—a very simple operation requiring no com-



other valves are hardened, with the workylene torch, as shown.

FIG. 9—Precision grinding of the valve face. The 12-in. diameter wheel operates at 5600 ft. per min.

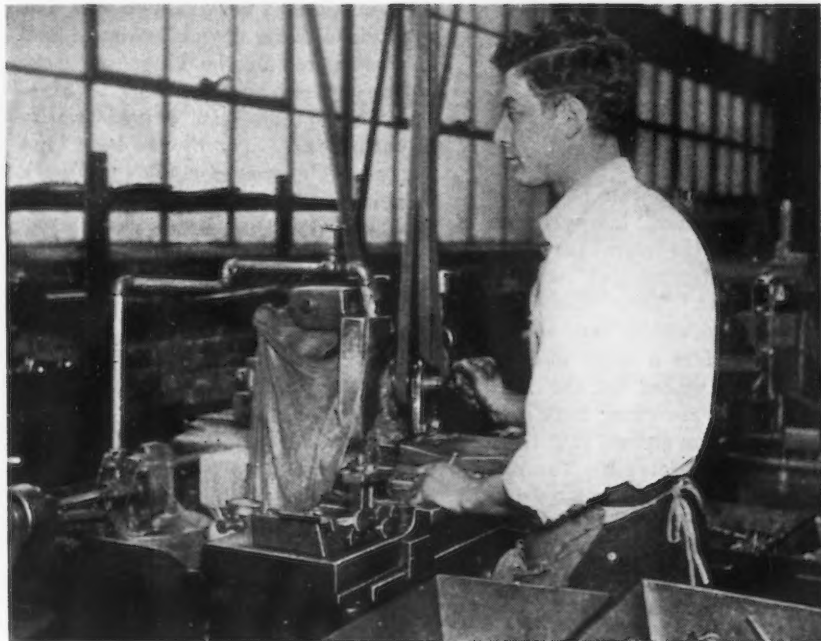
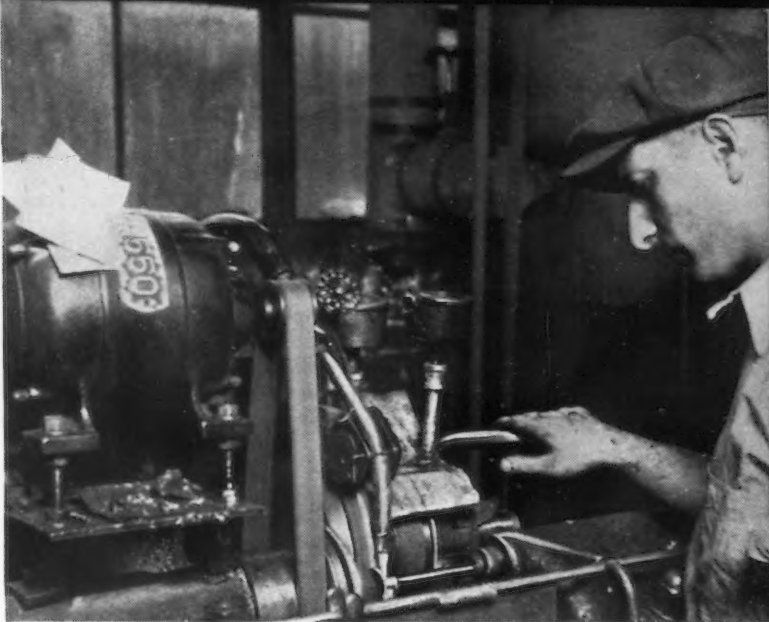
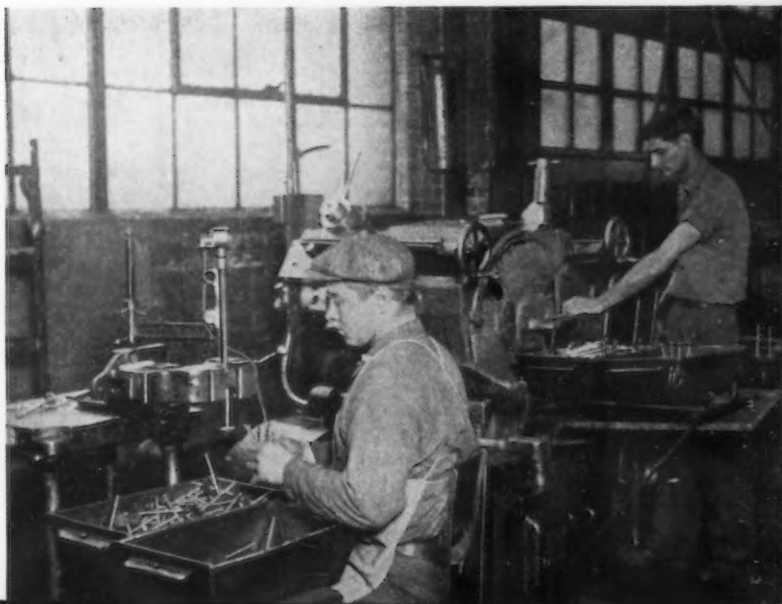


FIG. 10—Grinding the end of valve stems. A special work-locating device is employed to provide almost continuous production.

ment. The operation that follows, however, is an exacting one, consisting of grinding the stem, the work being held on centers in a No. 11 Brown & Sharpe cylindrical grinder. This operation is illustrated in Fig. 6. The machine is fitted with a manufactured alumina wheel, 14 in. in diameter, 1½ in. face, 40 grit, medium grade, operated at a surface speed of approximately 5500 ft. per min. The head end of the valve comes against the center and is rotated by drivers entering the two small holes, or the slot as the case may be. The

FIG. 11 — Stem ends are tested for hardness, as shown at the left. Valve stems are finish ground in the centerless grinder at the right.



operator loses no time on this operation. He does not have to stop the headstock rotation to put the work in place or to remove it and, further, he gages one valve while the grinding operation on the next one is in progress. A limit snap gage is fastened to the machine footstock so as to be handy for this purpose.

"Electric Eye" Machine and Gas Torches Used for Hardening

Hardening of the valve end which follows next is performed in one of two ways. Many valves are hardened in the Thompson "electric eye" machine shown in Fig. 7. In this operation the stem is held between copper jaws which are electrodes to heat the work. When the desired heat is reached the electric eye opens the jaws and lets the work fall into a chute which carries it to the cooling tank. Thus the operation is automatic with the exception of putting the work in place.

Not all valves can be hardened in this manner, however, as it would heat the stem too far up, which is detrimental with certain designs. Thus some valves must be hardened by hand as shown in Fig. 8. Here a large number of valves are placed in the cooling solution in a revolving tank and, as the illustration shows, just the tips of the stems protrude. The operator heats the stems one at a time by means of an oxy-acetylene torch. The moment the heat is removed the solution cools the valve rapidly enough to harden it.

The next operation consists of grinding the valve face, a precision operation, done on the Landis universal grinder shown in Fig. 9. The wheel platen is set over to generate the necessary angle and in this position the wheel face is fed back and forth past the work by means of the hand lever shown, which arrangement was designed by engi-

neers of the Thompson company. Otherwise it would be necessary to feed the wheel by means of the cross-feed screw and this procedure would consume too much time. In this operation the work is held between centers. The abrasive wheel is 12 in. in diameter, 1 in. face manufactured alumina, 60 grit, medium grade, operated at about 5600 ft. per min.

Special Work-Locating Device Facilitates Grinding Stem Ends

Stem ends must be smooth and even. This is brought about readily by a simple grinding operation on the No. 10 Brown & Sharpe grinder shown in Fig. 10. This machine is fitted with a manufactured alumina wheel, 12 in. in diameter, 1-in. face, 36 grit, M grade, operated at a surface speed of 5000 ft. per min. The work locating device, designed and constructed by the Thompson company's engineers, consists of a rotating spindle with a seat for locating the valve by its head and stem. The operator holds the work against the seat with a hand plug which fits the center hole. The pressure of the valve against the work locating seat is sufficient to rotate it with the fixture. It is a simple operation as it is necessary to feed the work back and forth past the wheel only a few times. The feed is automatic and it is not necessary to disturb it or the rotation of the work holding fixture to load and unload the work. Thus the operation is practically a continuous one.

Stems Hardness Tested

The operator at the left in Fig. 11 is sceleroscope testing valve stem ends to make sure that they are of the predetermined hardness. If the ends are too soft they will not withstand the continual impact of the valve tappets; if they are too hard they might chip or crack. In this operation, the work is held in quick acting jaws.

Finish grinding of valve stems in a Cincinnati centerless grinder is shown at the right in Fig. 11. This machine is fitted with a manufactured alumina wheel 24 in. in diameter, 6¼ in. face, 60 grit, medium grade, operated at a surface speed of 5500 ft. per min. It does not differ materially from the rough grinding operation previously mentioned except that the work must be held to very close limits, often as close as plus or minus 0.0001 in., and the finish must be very smooth.

Size Inspected by Comparators

Inspection operations include visual test for minute imperfections, and the testing of valves for size of heads and stems in a Jones & Lamson comparator. The comparator is set up with a valve that has previously been tested with micrometers and special gages. This valve throws shadows greatly enlarged against a screen provided for the purpose. The enlargement is such that 0.0001-in. error will throw a shadow ¾ in. away from the line that marks the standard. With this magnification slight errors in size of stem, taper of head, and concentricity when the valve is spun between centers are detected instantly. Through practice this inspection operation becomes one of great rapidity—and it leaves no chance for an argument.

While the foregoing constitute the principle operations through which an ordinary automobile engine valve passes from start to finish, it is readily apparent that the machine tool and other equipment involved must be flexible enough to take care of various valve sizes while the special fixtures used must be of a nature to afford rapid setting up for as soon as a long run on one type of valve is completed, the entire production line from start to finish must be set up for another type of valve.

A "FREE MACHINING" MONEL METAL



FOR the regular run of practice in the average equipped shop with modern tools, the machining of Monel metal does not present any serious difficulty. Even in some of its hardest forms Monel metal can be machined, though cutting speeds must, of necessity, be reduced.

On certain types of production — especially screws and bolts — where automatic equipment is used, a problem enters because of the higher speeds involved. This problem, of course, is not peculiar to Monel metal. It is shared by the other alloys which have high strength, toughness and the like, as common characteristics. Hence, it has been found necessary to produce these alloys in a special type for automatic lathe work.

The Huntington Works of The International Nickel Co., Inc., has completed the development of Monel metal in a new type for such purposes. This new type is known as "R" Monel metal. This machinable grade is secured—as is the case with steel, copper, aluminum and alloys of these metals—by adding an embrittling element. "R" Monel metal contains small additions of sulphur.

Naturally, the sulphur addition has some effect on the mechanical and other properties of the alloy. But, here, too, Monel metal does not suffer by comparison with other alloys used for similar applications. In none, can greater machinability be obtained without a sacrifice of one or more important properties. "R" Monel metal is slightly less corrosion resistant than the ordinary forms of Monel metal. A comparison of relative mechanical strengths will be found in Table 1.

By O. B. J. FRASER
Superintendent Technical Service,
The International Nickel Co., Inc.

Industry is finding "R" Monel metal to be a useful addition to the Monel metal family. While it is not used where the highest possible strength is required, in many cases its lower strength is outweighed greatly by the advantages of reduced machining time. Many intricate automatically machined parts are being made of it. It is not recommended for parts which must be subjected to severe cold work, for example, where more than a moderate amount of cold

upsetting is required. Neither should it be used where hot working is required, as in forgings.

It is well known that special free-machining alloys of many types have been utilized for years, and nearly always has it been necessary to accept reductions in tensile strength and yield strength of as much as 15 and 20 per cent from the values for the corresponding ordinary alloys. It is particularly noteworthy that the physical properties of "R" Monel metal even though lower than of ordinary Monel metal, are consistently higher than those of other free-machining alloys. This makes available the wide range of corrosion resistance of Monel metal for applications where machining accounts for the largest single part of production cost.

"R" Monel metal is produced in different grades designed for different sizes and for varying speeds of machining. In general, Grade 1 is for large sizes and for lathe work; Grade 2 for automatic machines; and Grade 3 only for special intricate machine work at high speeds. The table gives the range of properties for Grades 1 and 2, as compared to regular Monel metal.

TABLE 1

Cold-Drawn "As Drawn" Rods and Bars to 3 Min.	Tensile Strength p.s.i.	Yield Strength (0.5 Per Cent Set) p.s.i.	Elongation Per Cent in 2 in.	Brinell Hardness 3000 Kg.
Monel Metal	85-125,000	60-95,000	35-15	160-220
"R" Monel Metal..... (Grades 1 and 2)	80-115,000	50-90,000	35-15	145-210
Hot-Rolled Rods and Bars to 3 Min.				
Monel Metal	80-95,000	40-65,000	45-30	130-170
"R" Monel Metal..... (Grades 1 and 2)	75-85,000	35-60,000	45-30	130-165

ELECTRICAL INSTRUMENTS FOR

By B. R. HILL

Instrument Section Head, Westinghouse Electric & Mfg. Co., Newark, N. J.

MOTORIZING of machine tools—with both the motors and their control apparatus integral with the machine—has made considerable progress in the past several years. A further step is integral instrumentation of such tools. How electrical instruments contribute to more efficient operation, and the various types now available for machine tool use are outlined in this article from a paper presented by Mr. Hill at the machine tool electrification forum, held recently at East Pittsburgh.

instruments, until today we have instruments from the elaborate central station switchboards down to the appliance or tool where the power is finally used.

Industry is continually finding new and important applications of instruments resulting in better control, more economical use of power, and production of high grade finished products, with a minimum of complication and attention. Probably the most outstanding new uses along the above lines is in the machine tool field. Modern machine tools are powered with integral motors and the nec-

lands itself well to a further step in obtaining efficient operation; that of complete integral instrumentation.

The question naturally arises—why are instruments needed for the efficient operation of machine tools?

The following quantities must be easily and quickly determined by the operator to obtain the most from any motorized production tool: (1) Power consumption of the motor; (2) speed of various units; (3) position of various units; (4) rate of feed and (5) cutting speed.



ELECTRICAL indicating instruments are indispensable tools of the electrical industry.

From the very beginning of the generation and use of electricity it was necessary to have means of measuring the fundamental electrical units in order that the full development of this type of power could be realized. As the use of electricity has expanded, so has the use of all forms of electrical

AT RIGHT

SMALL a.c. tachometer generator used for speed measurements.



essary control units. We, therefore, have a form of power application to the machine tool which

Power Measurement Important

Power consumption is probably the most important single function in efficient machine tool operation. By measurement of power taken by the motor, the operator can determine at a glance whether or not the machine is overloaded, resulting in undue wear of parts or cutting tools or troubles developing in the motor, control or wiring. By observation of power consumption, the machine can be operated at maximum efficiency without danger of trouble developing.

A simple application of the power measurement idea is used



AT LEFT

MINIATURE rectangular instrument available in both a.c. and d.c. ammeters and voltmeters, flush or projection mounting.

MACHINE TOOL USE



AT LEFT
TIME meter which registers total elapsed time in hours.

on surface grinders where an instrument is mounted in the side of the machine housing and connected into the motor circuit. This gives a direct indication of power used by the grinding wheel and enables the operator to choose the proper rate of feed. Certain lathes use two motors, one for driving the spindle and another for operating the cross-feed. Instruments are connected to these two motors to measure power. From the indications of the instruments, the relative work of the two motors can be determined and the adjustments of the lathe made accordingly for maximum efficiency.

In addition to information on proper settings of various parts, the power consumption instrument also tells the operator when tools need sharpening. Dull tools rapidly increase power consumption and often instruments are used in the motor circuit for the sole function of determining when tools are to be changed. An

outstanding example is the polishing wheels used in finishing of plate glass; worn wheels increase power consumption many times normal and instruments are used on the motors to determine when the wheel is to be changed.

Speeds Determined Quickly

Second in importance to power consumption is speed. In certain forms of machine tools speed determination is indispensable, particularly on lathes where spindle speeds and cutting feed rates must be accurately known to make proper adjustments. Also in certain forms of rail milling machines several motors are employed to perform separate operations. Here again speed determination is important, such as selection of proper head feed rate, table and rail feed rates.

Recently built profile milling machines have as many as five individual motors for the different drives. It is apparent that quick



MINIATURE rectangular flush mounting instrument available in ammeters and voltmeters, both a.c. and d.c.

speed determination on a complicated machine of this kind is necessary to obtain efficient operation. Power consumption of the individual motors is also important in order to get before the operator a general picture of the operation of all parts.

Another form of measurement which is rapidly being recognized as a necessary part of machine tool operation is that of position. In the elaborate profile milling machine referred to above, it is of considerable assistance to the operator to know the relative position of control units for the motors which determine spindle speeds and feed rates before starting the machine and also have this information in view while the machine is running.

Application of Instruments

A wide variety of standardized instruments are available for machine tool application. Recent trends have been to design the machine tools so that provision is made for mounting on the machine ordinary switchboard instruments. Often the machine is controlled from a pendant station located within easy reach of the operator. Usually the pendant station is small and of light weight, requiring, therefore, a small instrument unit. Sometimes one instrument is used for several functions by switch connection to different circuits or tachometer generators particularly where space on the control unit is limited. It is usually considered of most importance to have the instrument

mounted as near the operator as possible and thus the control stations or control boards are positioned and designed with this in mind, and utilizing the smaller instrument units.

Standard round instruments range in diameter from 2 in. up to and including 7½ in. Some manufacturers furnish 9 in. diameter instruments. All round instruments are available in either

the current changes with power change. This means that a lower cost and somewhat simpler instrument can be used. For accurate determinations of power a wattmeter can be employed.

On polyphase circuits a single ammeter is often used in one phase to read current input to the motor. This is approximately a correct method of measurement assuming balanced phase conditions on

ratings of 115, 230 and 575 volts and currents self-contained up to and including 20 amp. For either ammeters or wattmeters in ratings beyond those mentioned above, it is necessary to use transformers for a.c. circuits and shunts for d.c. circuits.

Withstand Starting Inrush

The question often arises in the application of instruments to



Position motor transmitter used in connection with phase angle indicators to indicate position.

flush or surface mounting and have scale lengths ranging from 1.5 in. for the 2 in. size to 5 in. for the 7½-in. size.

Square or rectangular instruments are also available, in sizes from 3 in. up to and including approximately 5 in., with corresponding scale length. The most recent addition to these lines are small 3 in. rectangular units particularly suited for small control units and pendant stations.

Selection of Ratings

Selection of instruments for machine tool application is based primarily on the unit to be measured. For power consumption, ammeters are widely used, with scales calibrated in horsepower, watts, amperes, etc. It should be noted that an ammeter does not give true measurement of power because power is a function of volts, amperes and power factor (if a.c.). However, in most machine tool applications relative indications are most important and, therefore, the voltage and power factor can be neglected in favor of a straight ampere indication of relative power consumption, since

motors, which is usually true. Here again three individual ammeters can be used for high accuracy when required. Selection of the type of instrument is thus largely determined by the cost of the job and the amount of information necessary.

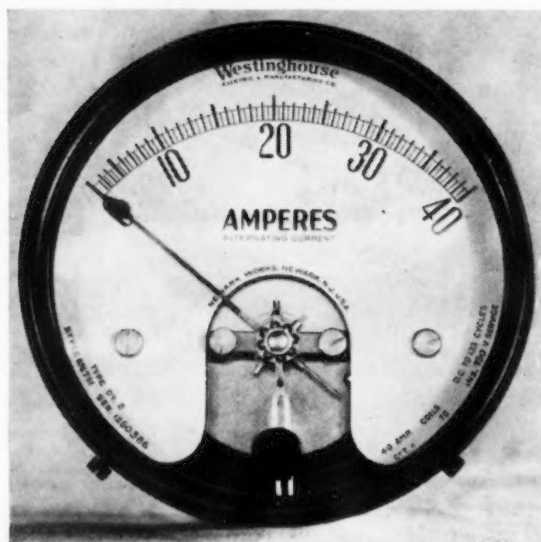
In the selection of the capacity of the instrument, it is well to keep the indications of the pointer between half and two-thirds scale for best accuracy and readability under normal load conditions. The current or power drawn by the motor when driving the machine at normal load determines the rating of the instrument to be selected. Standard ammeters are available up to and including 75 amp. self-contained in the larger sizes and 50 amp. in the smaller sizes, either a.c. or d.c.

Wattmeters are available in

motors regarding the effect of starting currents of the motors. Of course, all motors take more current at starting than while under normal running conditions. Most indicating instruments are designed to withstand this inrush current while starting the motor, without damage either mechanical or electrical. For instance a 5 amp. ammeter of one manufacturer will stand 500 amp. for 2 sec. without damage. Generally the overload rating of the majority of switchboard instruments, either ammeters or wattmeters is conservatively set at about 100 amp. for 2 sec. or 25 amp. for 1 min., which is adequate for all machine tool applications.

In connection with instrument accuracies, generally the accuracy rating of the instrument is closely tied-in with size and scale length.

BELOW
STANDARD 4-in. ammeter for a.c.; available also as voltmeters, wattmeters, power factor meters for a.c., and ammeters and voltmeters for d.c.



Cost is also a factor. Usually the lower the cost the lower the accuracy rating. Even the low cost instruments are generally considered satisfactory for machine tool applications because relative operating conditions are really more important than a very high degree of accuracy. When it is considered that the normal accuracy ratings of the low cost 2 and 3-in. instruments is as high as 2 per cent, it is apparent that even these small units are well suited for certain machine tool applications. The large instruments, that

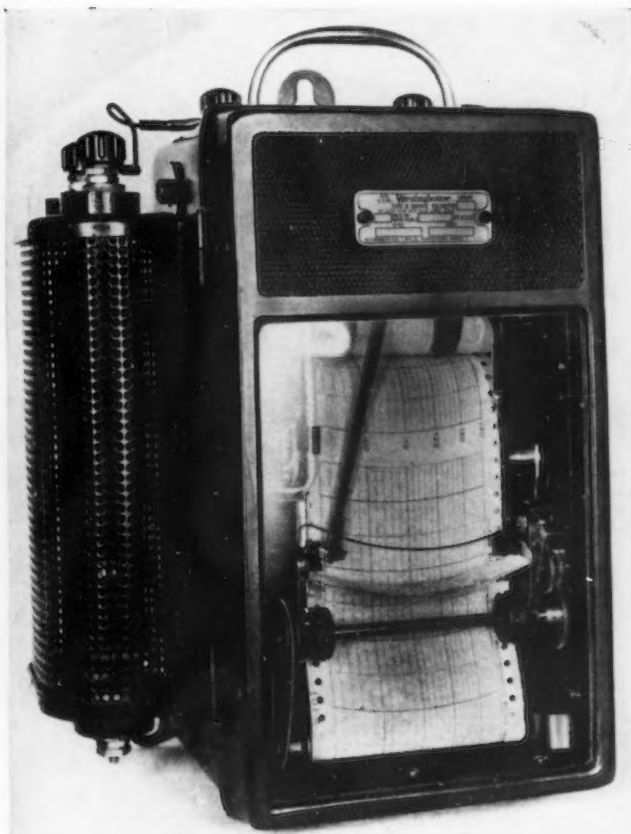
watts, etc. Here the electrical instrument is used as a means of measuring speed and position which are not electrical units.

The electrical tachometer consists of a small generator which is mechanically driven by some part of the machine tool, such as the motor shaft, spindle or feed head. The electrical output of the generator is measured by an indicating instrument, the scale of which is calibrated in terms of speed units such r.p.m., r.p.h. ft per min. or ft. per sec. Since the output of the generator varies in pro-

mechanical connections and speed ranges.

Position Shown Electrically

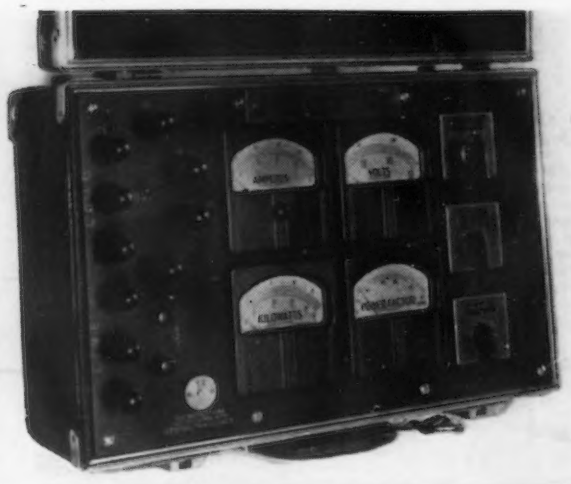
Probably one of the most interesting applications of the electrical instrument for non-electrical measurement is that of position. Here an electrical phase angle meter is used in connection with a small polyphase wound rotor motor. The phase angle meter and stator of the motor are energized from the same source of a.c. power. The rotor of the motor is connected to one side of the elec-



STRIP chart recording instrument available as ammeters and voltmeters for obtaining continuous graphic records.

BELOW

PORTABLE unit for complete analysis of motor operation. It gives readings of amperes, volts, watts, power factor single or polyphase. Has current capacities up to 125 amp., self-contained, and voltage capacity up to 575 volts, self-contained. Can also be used with external transformers.



is, those from 4 3/8 in. up to and including 7 1/2 in. in diameter, are generally rated at an accuracy of 1 per cent. These accuracy ratings are based on this percentage of full scale deflection at any point on the scale, which is in line with A.I.E.E. rules.

Measurement of Speed and Position

Reference has been made to the importance of speed measurement, also that of position. These measurements while accomplished with instruments are not primary instrument measurements of fundamental units of volts, amperes,

portion to speed of its shaft, the instrument can be calibrated in terms of speed of the part of the machine to which the generator is connected. The conventional sizes of indicating instruments already mentioned are used with speed calibrations on the scales. Some forms of tachometer generators are d.c. machines with permanent magnet fields while others are a.c. machines having no commutators, brushes or slip-rings and operated with saturated magnetic circuits to avoid calibration changes with change in magnet strength. They are available for application to a wide range of

trical circuit of the phase angle meter. As the rotor of the motor is turned the rotor generates a voltage in proportion to the angle through which it is turned and in phase position with respect to the supply voltage depending upon this angle.

The phase angle meter thus gives an indication of rotor position on the motor and has a full 360 deg. scale which can be calibrated in terms of the motor rotor position. Application of this device to machine tools has already been mentioned in connection with the indication of rheostat positions, etc.

HOW PLANT SAFETY IS ATTAINED

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TYPICAL methods and devices by which industrial plants attain a high record of safety by positive prevention of accidents are shown in this series of photographs, taken in the Flint plant of the Chevrolet Motor Company.

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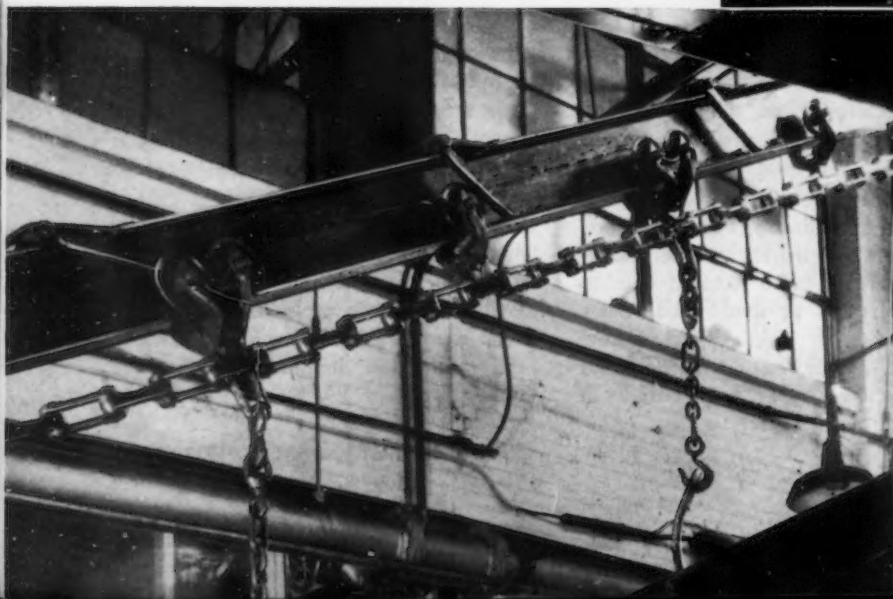
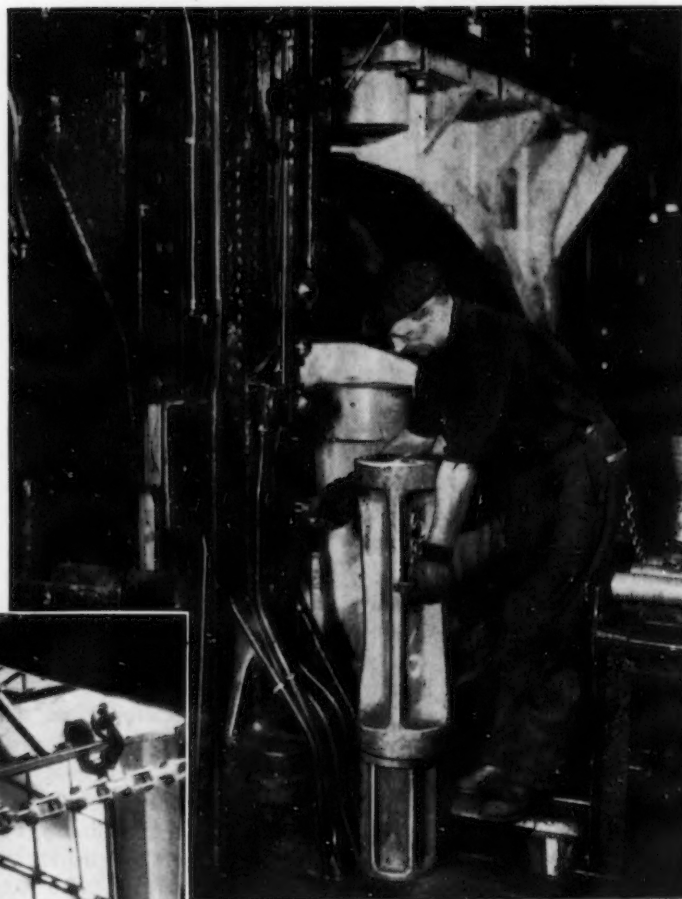
AT RIGHT

SAFETY regulations at the Chevrolet Flint plant require that a safety block be inserted in a press whenever an employee is required to work between the dies. The photograph shows a safety block of Dow metal which, although it weighs but 40 pounds, is many times as strong as a timber block. Note that an electrical plug is chained to the safety block. The power cannot be turned on unless this plug is fitted into the receptacle in the side of the press. Therefore, when the safety block is in use, the machine cannot be started, and the operator has to return the safety block and plug it in before resuming operations after any repair work. Carl Richards is about to insert the safety plug.

o o o

BELOW

THE chain of the Chevrolet engine conveyor line where it transports engines from one floor to another on a sharp slope, is loaded with many tons. Automatic safety pawls have been mounted on the I-beam support of the conveyor so, should the chain part, the conveyor and its load will not roll down the incline.



o o o

AT RIGHT

THE operator of this massive trimming press, which removes excess metal from the edges of Chevrolet fenders and then forms the edge into a rounded channel, is prevented from getting too close to the descending head of the machine by a strong metal guard. Edward E. Field is shown inserting a fender between the dies.

o o o



ABOVE

NO opportunity is overlooked in the Chevrolet plants to safeguard even the smaller machines or to prevent even minor mishaps. This illustration shows a steel shield on a fixture of a punch press used in heading rivets in the fan belt drive pulley. The shield not only prevents the operator's hand from slipping off the handle into the machine but also deflects any bits of metal that may chip off from the work or the tool.

o o o

AT RIGHT

CHEVROLET has devised a special cradle to prevent heavy gear wheels, used to drive immense presses, from tipping over while undergoing repairs. The operator can turn the wheel readily, since it is supported on steel rollers on roller bearings. Don A. Doering is shown scraping the bushing of one of the fender-press wheels, weighing 2,000 pounds.





BROACHING

LEAD COMPOSITION

CYLINDERS.....

o o o

By ROGERS FISKE

Western Editor, THE IRON AGE

o o o



EXPERIMENTATION and development of a broaching machine and cutters have been carried to successful conclusion by The Goss Printing Press Co., Chicago. The problem involved was that of broaching cylindrical printing press plates which are cast of metal which contains about 80 per cent lead. The resulting casting is weak and it offered difficulties of tool design so that chips would curl and readily free themselves from the cutter edge.

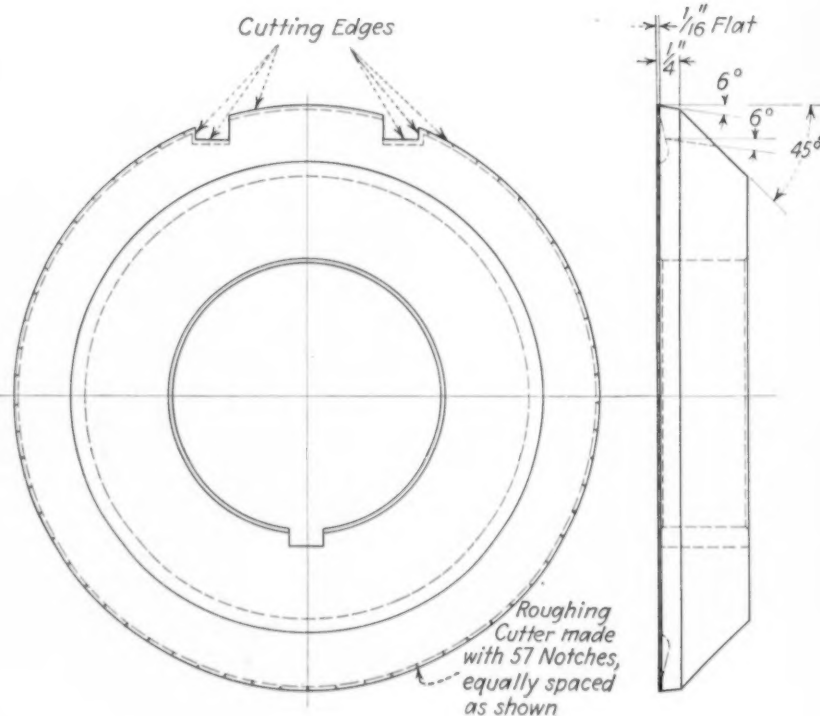
The problem originated when the Goss Co. undertook to design a printing press using a cylindrical plate which is held to the press cylinder by a tension lock. The practical advantages of this design are that, end pressure on the plate is not employed and, therefore, the plate does not tend to buckle; the plate is held throughout its length by a single lock-up device thereby checking the tendency of the plate to bulge under centrifugal force; and higher press speeds, up to 750 cylinder revolutions per minute, are made available.

Plates are cast $\frac{3}{8}$ in. thick and $7\frac{1}{4}$ in. outside diameter. Their length may be up to that required for an eight-column newspaper. They are cast with one side open and along each edge on the inner surface of this slot are lugs which

are gripped by the lock-up device when the plate is mounted in the press. The broaching operation consists of cleaning the inside of the plate and at the same time giving a true and clean surface

to the lugs where they are gripped by the lock-up device.

Inasmuch as the plate is cast from a paper matrix accuracy closer than 0.002 in. is not considered important. However, it is



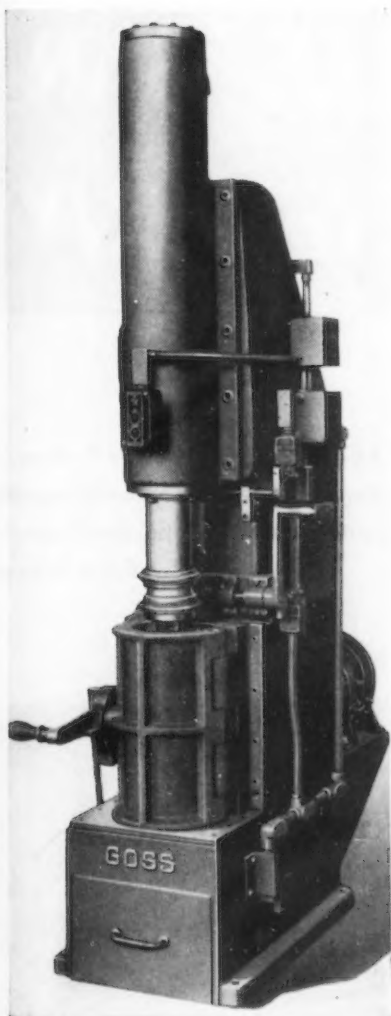
EXPERIMENTATION led to the above type of cutter.

highly desirable to have uniform wall thickness and an inside surface of such quality and trueness that when the plate is locked in tension on the press cylinder, the outside or type surface will be a true cylinder.

The broaching machine as designed and built by the Goss Co. is of the vertical type. The spindle is keyed so that it cannot turn and it is guided by two large bearings spaced so as to assure rigidity. Mounted on the bed is a shell clamp constructed in two halves which are hinged at one side and on the opposite side is a lever actuated cam closing and locking device.

A plate having been placed in the shell, the front half is swung to closing position and as the shell

THIS cylindrical plate must be of uniform thickness and its inner surface must be of such finish that when it is pulled tightly around the press cylinder the type surface will be in the plane of a true cylinder with its axis coinciding with that of the press cylinder.



THE clamping device on this broach puts the slotted cylindrical press plate under tension so that the soft metal is backed by the fixture shell.

is locked, the plate is expanded so that it bears snugly against the inner surface of the shell. This assures proper backing for the soft metal cylinder so that a satisfactory broaching operation can be performed. This machine requires a 3 hp. motor and the hydraulic mechanism is operated under 650 lb. pressure.

The first broach was built with ten stepped-up cutters, but as experience was gained, the number of cutters was gradually reduced and finally standardized at two. The leading cutter is a roughing tool and the second cutter takes the finishing cut. Experiments were made with up and down cuts, neither of which offered advantages over the other and the final design provides for a single down cutting stroke at a speed of 2 in. per second.

At first, considerable trouble was experienced because chips made by the roughing tool rolled up at the cutter tip. This problem was overcome by 90 deg. notches, $\frac{1}{4}$ in. apart on the edge of the tool. As this cutter passes down the plate, it leaves small ribs, but the metal taken out between the ribs forms curled chips which

move away from the cutter tip. The finishing cutter is made without notches and it cleans out the ribs. Both cutters sweep the clamping faces of the two lugs. The roughing cutter removes about 0.015 in. metal and the finishing cutter, except for removing the ribs, barely touches the surface to remove about 0.00025 in.

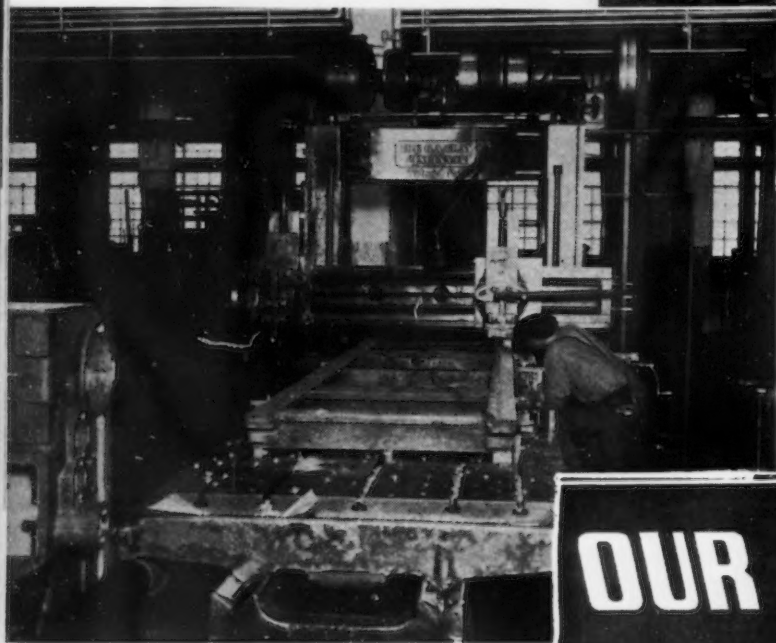
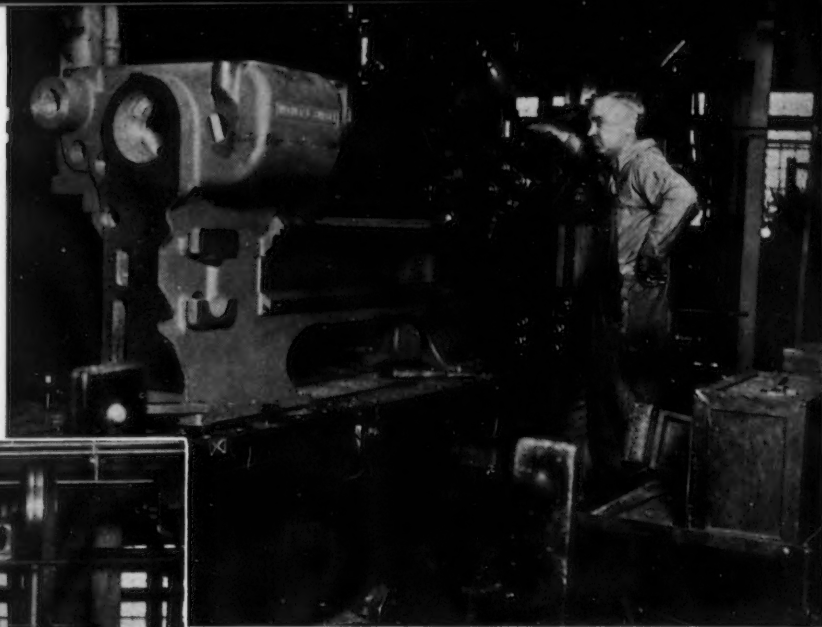
Except for the notches and diameters, the two cutters are of similar design. The edge of the cutter blade is straight for $\frac{1}{16}$ in. and then it clears back at 6 deg. for $\frac{1}{4}$ in., after which it cuts back sharply at 45 deg. Experimentation has not disclosed the importance of the grinding angle except that it should extend back about $\frac{3}{4}$ in. in order that the chips will curl and not ball up at the cutting edge.

Tension on the plate is removed when the shell clamp is opened. The press cylinder is a closely machined forging which is fitted with the lock-up bar which is cam operated through a screw. This bar travels in a straight line and engages the lugs on the plate. In this manner the plate is put under tension and drawn snugly to the surface of the press cylinder.

AT RIGHT
PLANING is also best adapted for finishing the ways of the lathe bed and the other finished surfaces on the bed front. Milling is "out" for this purpose because of the overhanging headstock which is an integral part of the casting.

o o o

BELOW
ACCURACY begins with the bed of the machine tool. In this case it is of welded steel construction. The design lends itself to most efficient finishing by planing.



OUR CAMERA MAN FINISHING OF HEAVY

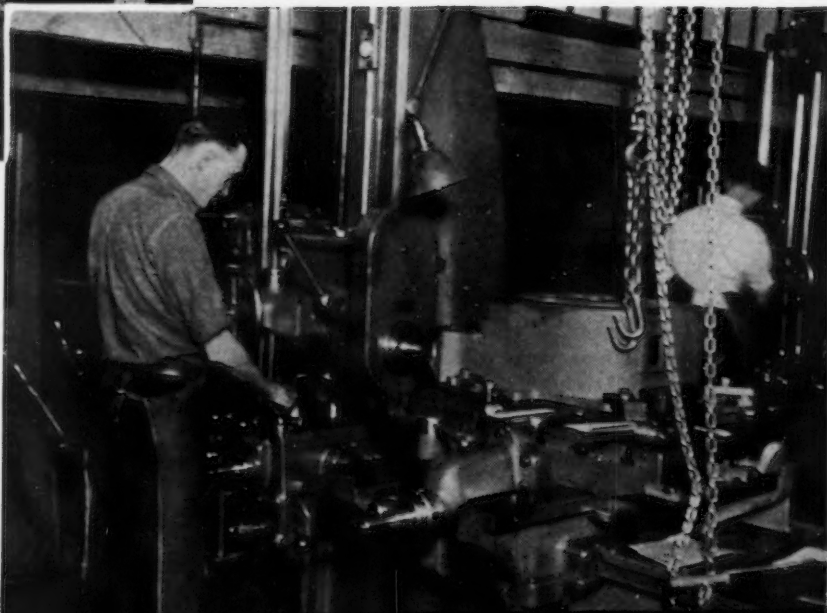
ACCURACY in machining is the first requisite to impart similar accuracy to their products. interesting and suggestive operations on heavy of the Warner &

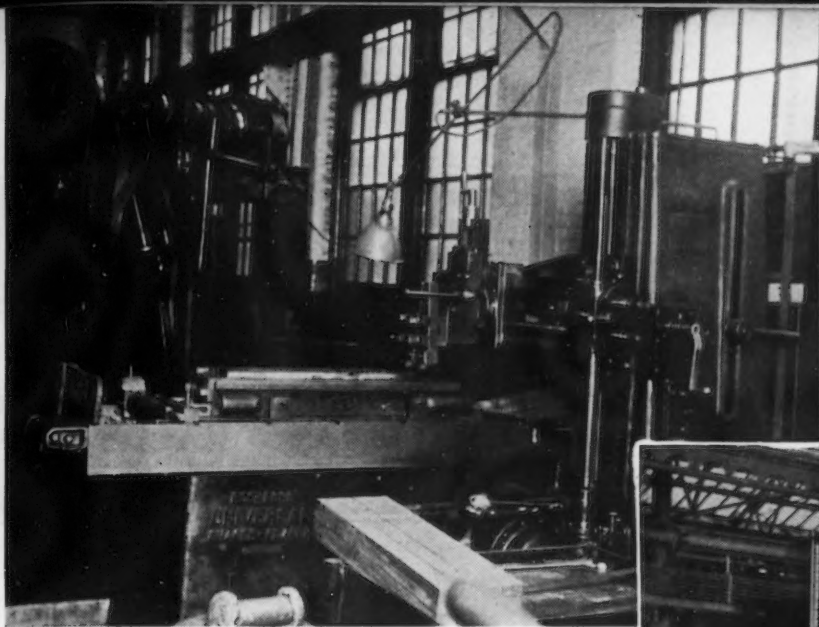


ABOVE
TWO way precision dial indicators, plus accurate bar gages provide the means of securing interchangeability in boring saddle aprons without the use of a jig and bushings. Set-ups of this kind are particularly valuable on work entailing a variety of sizes.

o o o

AT RIGHT
GEAR boxes are milled and bored at one setting, thus assuring that bored holes will stand square with the milled surfaces.





AT LEFT
A HEALD magnetic chuck is used to advantage with this Rockford universal shaper. Heavy cuts may be taken if care is exercised to back up the work properly. Also advantageous in planing such parts as taper gibs.

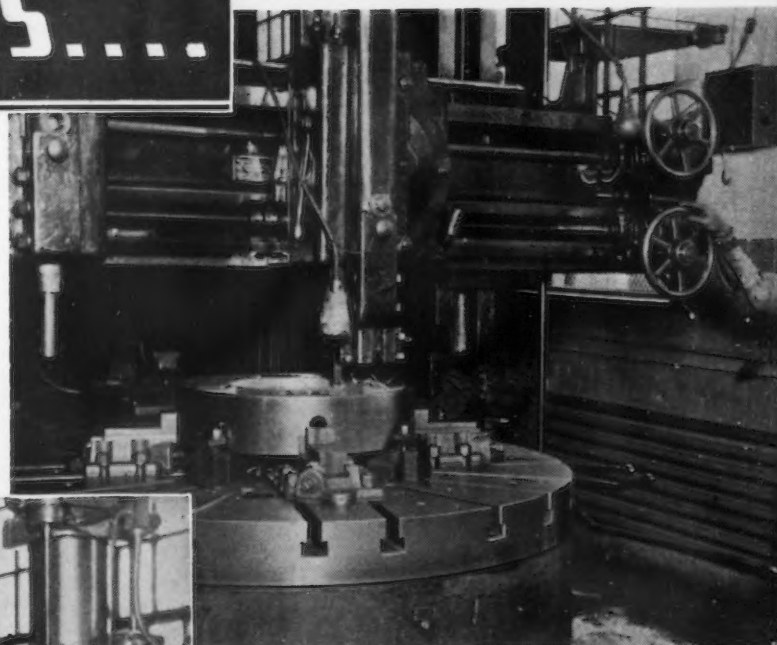
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BELOW
A N interesting example of jugged machine work on heavy parts is shown in this picture. The bed ways form the locating surfaces, the drive is of the floating type and micrometer location insures duplication and interchangeability of parts.



PRESENTS ACCURATE MACHINE PARTS....

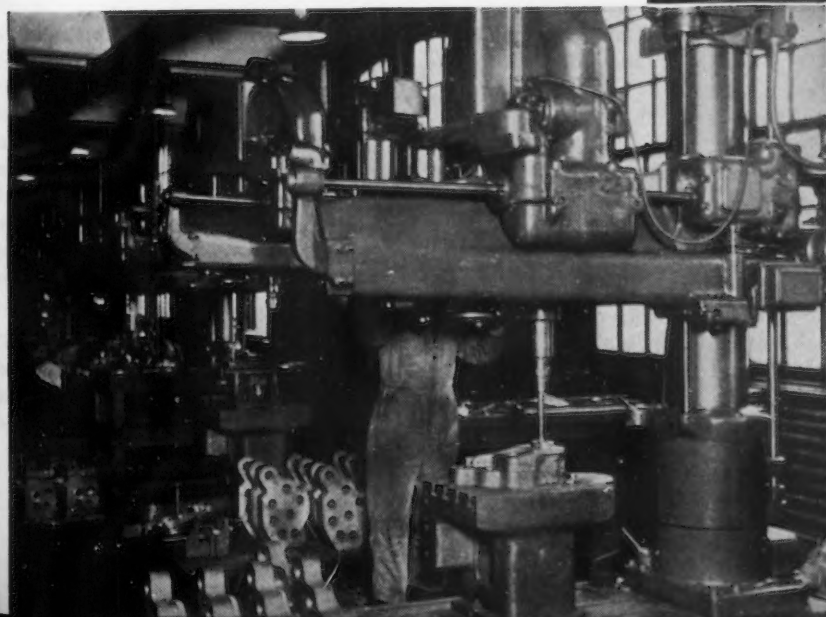
in producing high grade machine tools which are
 On these pages, our camera records and presents
 machine parts which are used in the construction
 Swasey turret lathes.



ABOVE
R ADIAL drills offer many advantages especially where heavy jigs are involved since it is less effort to adjust the machine than to move the jig. Accuracy is also enhanced because of the possibility of fine adjustments.

o o o

AT LEFT
E ASE in locating work is one of the advantages offered in this set-up in which a Bullard vertical mill is recessing the back of a turret lathe chuck. A variety of operations are performed in this plant on machines of this type.



STRAIGHT

HIGH



FIG. 1—Checking the pitch diameter of a rear-wheel tractor drive gear.

o o o



WHERE comparatively large quantities of parts are passing through manufacturing processes, straight-line production lowers overhead as it reduces handling costs to a minimum. This is especially true in cases where heavy parts are made. There is no sharp dividing line between heavy and light machine parts, but in general any part that cannot be picked up and handled by one man without the aid of a chain hoist or other handling means is called heavy. On the other hand, when a number of parts can be conveniently placed in a tote box such parts are called light, even though they may weigh several pounds each.

While straight-line production reduces handling costs it also involves a large initial expense for

machine tools, inasmuch as lathes of an identical type, for example, may be found in a dozen different production lines. However, while the machine tool investment may be comparatively heavy, manufacturing costs actually are reduced as no time is lost transporting parts from one department to another as in cases where the departmental system of manufacture is followed.

Production lines can be long or short, depending on how many parts are handled daily and the number of operations to be performed on each part. In this article is illustrated and described the operation of a short production line at the plant of the Cleveland Tractor Co., Cleveland. This line is devoted to the manufacture of drop-forged steel rear wheel drive gears.

These units are 16¼ in. in pitch diameter, 3 in. face, and have a 2¼ in. splined hole. However, this is only one variety of gear made on the production line here described. In Fig 1 is shown one of these gears in process of inspection wherein the operator is measuring

its pitch diameter with a vernier caliper, taking the reading over plugs which bear on the pitch line of the gear.

Automatic Lathes for First Operations

In the first manufacturing operation the gear is gripped in the chuck on a Gisholt automatic lathe as shown in Fig. 2. The gear rim is provided with lugs which bear against the chuck jaws so that the possibility of the work shifting is eliminated. This is important inasmuch as the work must be held by the hub only while heavy cuts are being taken over the outside diameter. With the work located in this manner the outside diameter is rough turned, the sides rough turned by straddle tools, one side of the hub is faced and the hole is rough bored, finish bored and reamed. To save time the bore must be machined while the work on the rim is in progress. As a satisfactory cutting speed for the rim would be entirely too slow for work in the comparatively small bore, the boring tools rotate in a retrograde direction and thus bring up the cutting speed to a point where they can cut effectively. The tailstock spindle carrying these tools is driven by the motor shown at the upper left of Fig. 2.

There are two of these Gisholt lathes in this production line and between them and serving both is a drill press on which the second

LINE PRODUCTION GIVES

OUTPUT OF TRACTOR GEARS

operation on the gear is performed. This consists of spot facing the other side of the hub, the gear being located of course on the drill press platen from the side previously finished.

Finish Turning Follows Hole Splining

From Fig. 1 it may be seen that the hole in this drive gear is splined. There are ten splines. The splining operation which follows spot facing the back side of the gear, is very simple and is performed on an Oilgear broaching machine as shown in Fig. 3. Such an operation possesses the great advantage of being rapid and accurate. All that is necessary is to locate the gear, insert the broach and start the machine. When the broach is through the hole it stops automatically. Accuracy in this operation is of course governed by the accuracy of the broach, but the manufacture of these broaches also has been reduced to an exact science by makers of such tools and extreme accuracy of the product can be assured. Notwithstanding that broaches of the type used are quite expensive, broaching of the holes in question is not an expensive operation due to the fact that during its life one broach can finish thousands of holes.

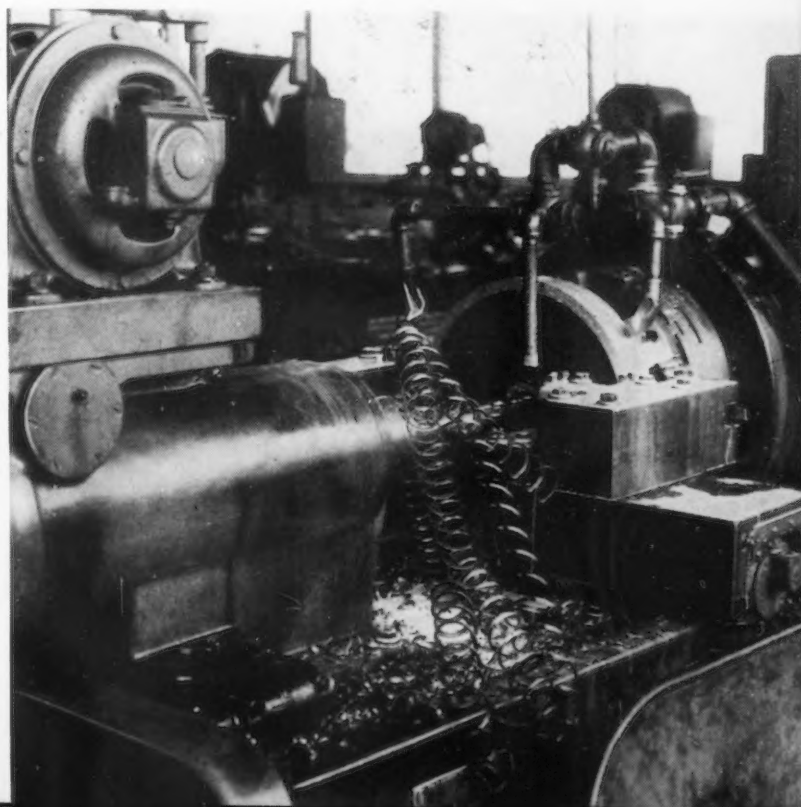
After broaching the gear is ready for finish turning, which is done as shown in Fig. 4 on a heavy-duty Monarch engine lathe. As the il-

lustration shows, the work is located on a splined arbor. The end of the arbor is squared and fits into a driver strapped to the lathe faceplate. In this operation the outer diameter is finished, the sides faced, and the hub faced. As the gear is located from the splined hole, and as all the finish turning operations are done at one setting of the work, it is obvious that the surfaces thus finished will be square with the bore, which is the condition sought. Thus a gear finished in this manner will not "wobble" sidewise when put into use.

Massive Arbor Used in Hobbing

The final manufacturing operation consists of cutting the 65 teeth which are, on this model, of 4-5 pitch, 20-deg. pressure angle. Gear cutting is done by the hobbing process on a Gould & Eberhardt machine as shown in Fig. 5. The type of gear cutter arbor used is shown in Fig. 6. As this fixture is of massive construction, the machine can be operated at maximum capacity without danger of chattering. This is assured by the fact that the

FIG. 2—Lugs on the gear bear against the chuck jaws and prevent shifting of the work. The bore is machined while the work on the rim is in progress, the tailstock spindle that carries the boring tools being driven by the motor at the upper left.



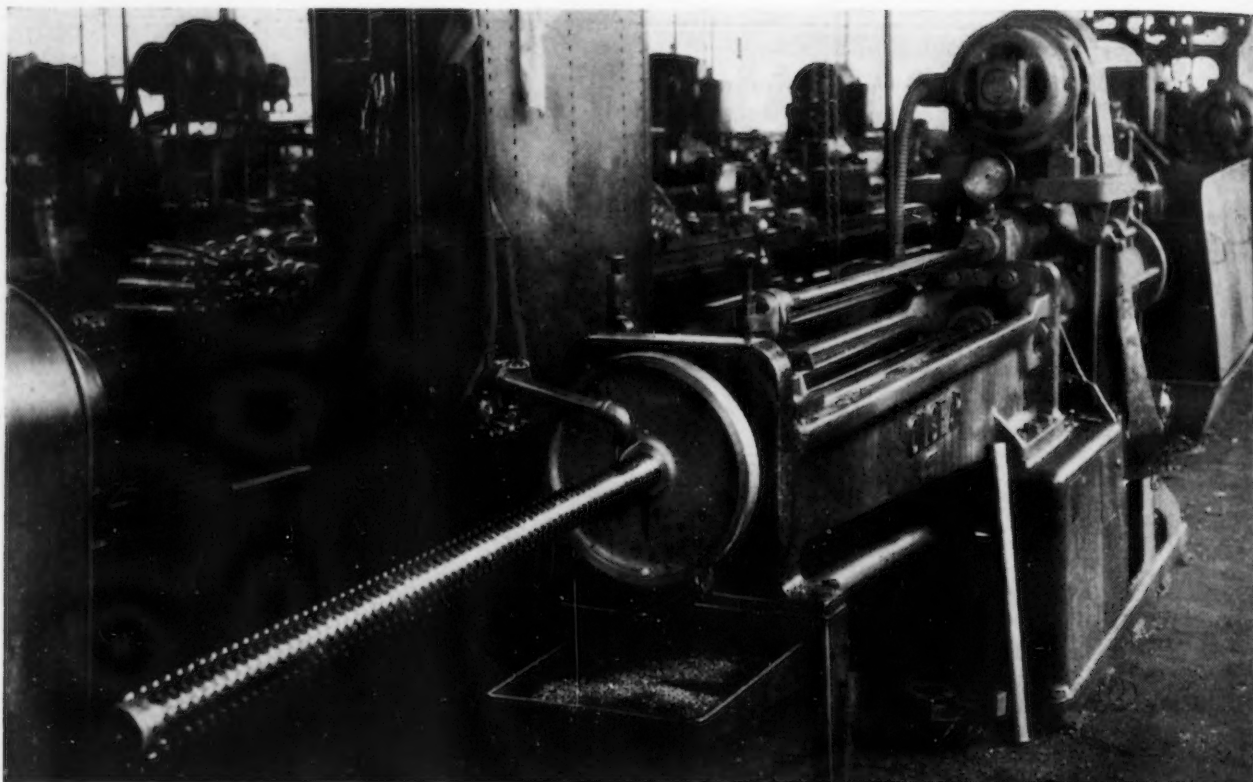


FIG. 3—The ten splines in the hole of the gear are accurately and rapidly cut on this broaching machine.

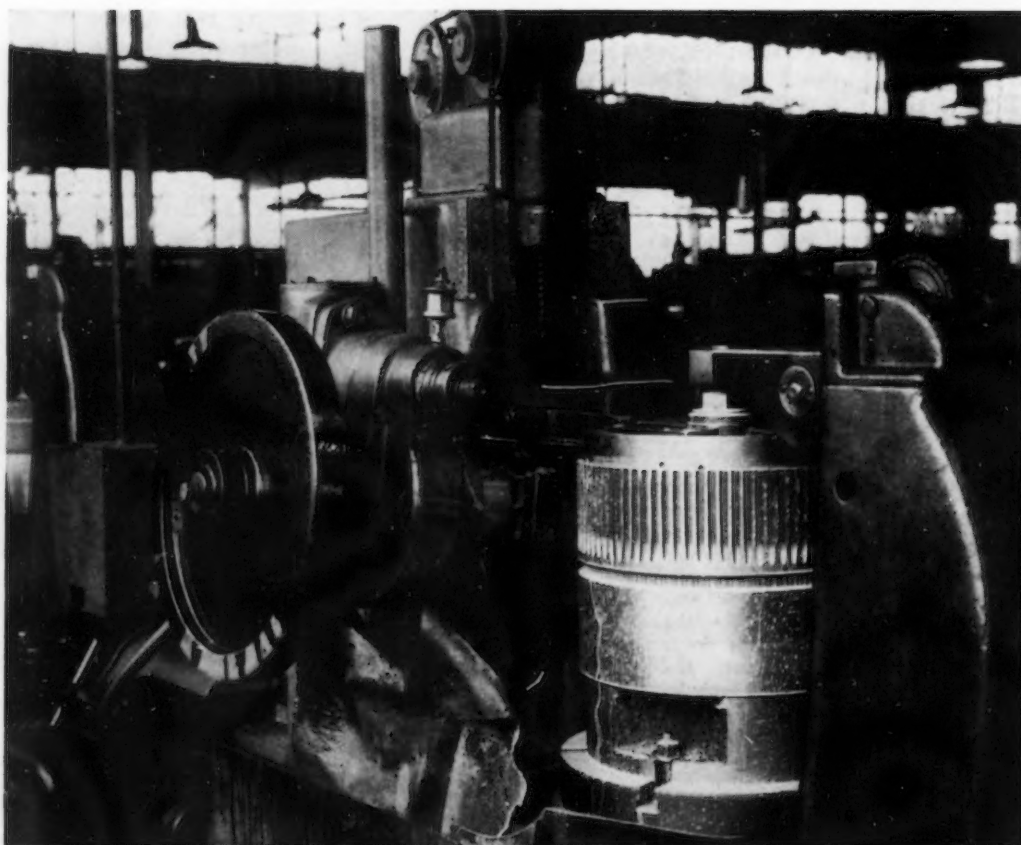
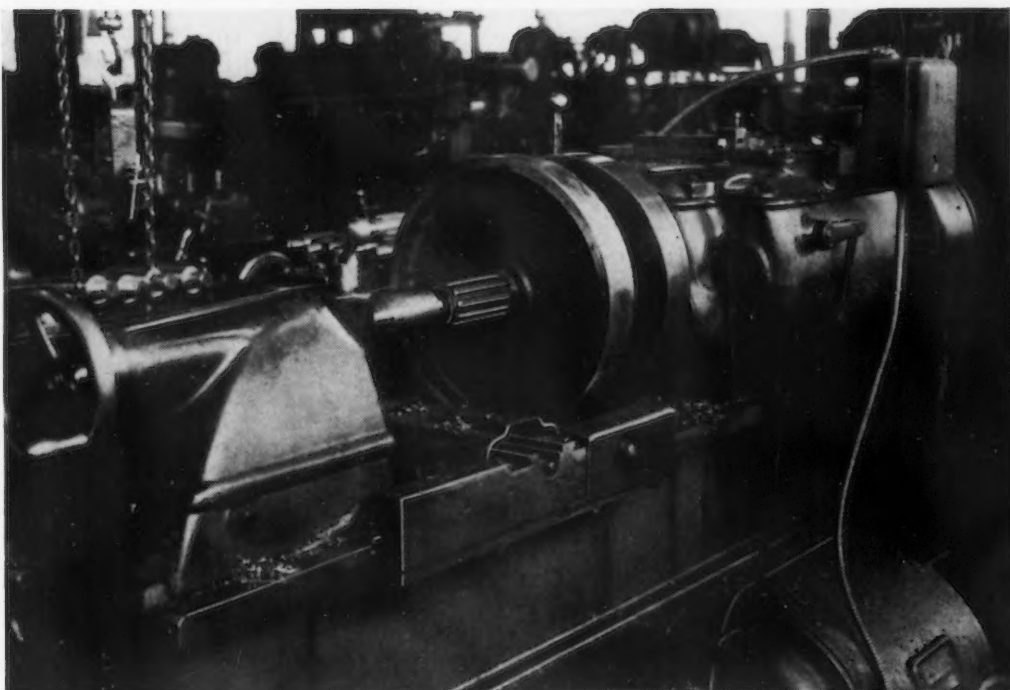


FIG. 5—In the final manufacturing operation the 65 teeth of the gears are hobbled on this machine, equipped with a massive work-holding fixture.

FIG. 4—Gears are finish turned in a heavy-duty engine lathe. The work is located on a splined arbor, one end of which fits into a driver strapped to the lathe faceplate.



work is located from the splined hole and clamped near the outer diameter. Thus any vibration which would cause chattering is absorbed. The arbor in question is bolted to the machine table and located by means of the boss shown at the right in Fig. 6. This assures concentricity between the gear pitch line and the bore, which, of course, is absolutely necessary.

After the teeth are cut the gears are placed on a roller conveyer which takes them to the first inspection station; from there they go to stock or directly to the assembly line.

While the foregoing outlines machining operations, it is only part of the story as far as economical production goes. All the modern machinery possible to install will not result in economical manufacture unless means are employed along the production line to reduce idle time to a minimum and to increase the productivity of man hours to a maximum.

Gears generally go from one machine to another in lots of four, for in this manner it has been found that two Gisholt lathes, one drill press, one engine lathe, one broaching machine and two gear cutters can keep production flowing satisfactorily without bottlenecks. Further, the entire line can be handled by two men. Thus two men to seven machines means economy as to actual man hours.

Back of the production line is a roller conveyer which leads to the roller conveyer previously mentioned. The gears in question weigh approximately 80 lb. each and to transfer them from the conveyer to the various machines by man power alone is not satisfactory. Thus a switch track trolley is installed over the line so that a light hoist can serve every machine.

In the actual machining operation time is saved by using rigid tools and combining as many operations in one setting of the work as possible.

Modern machinery, careful production line layout, and the spreading of man-hours as economically as possible have resulted in very rapid and economical production.

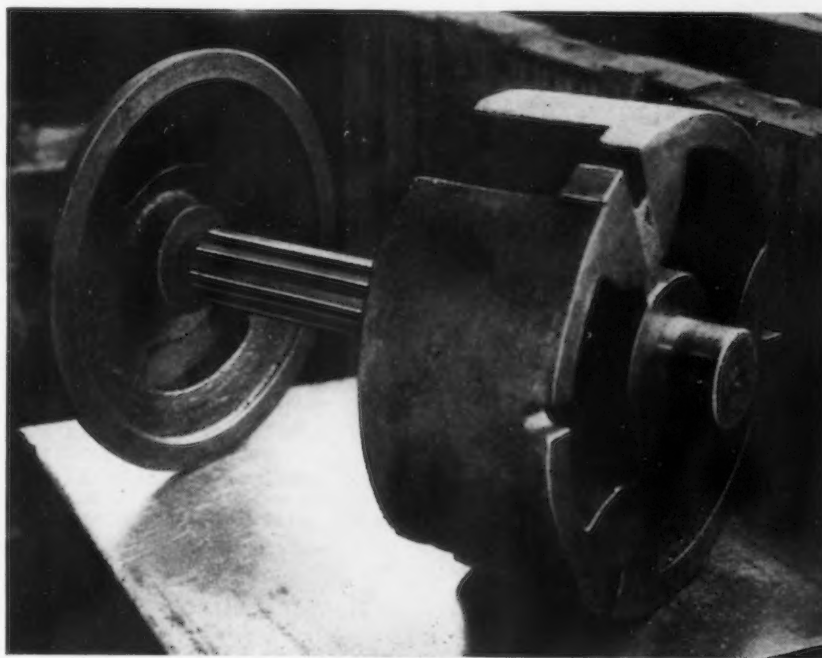


FIG. 6—This massive arbor permits operation of the hobbing machine to capacity without danger of chatter. The work is located from the splined hole and clamped near the outside diameter.

Steel Companies' Earnings in First Half Reflect Revival in Heavier Products

By AUGUSTUS SLATER
Industrial Analyst, Goodbody & Co.,
New York

TANGIBLE evidence of the broadening of recovery forces is reflected in the six-months' earnings statements of 20 leading steel companies owning approximately 90 per cent of the country's ingot capacity. Aggregate net profits of this group for the first half of 1936 amounted to \$47.6 million, or more than 2¼ times the \$20.7 million earned in the same period last year. An important feature of this improvement, significant of capital goods revival, is the fact that over 80 per cent of the net gain was accounted for by the United States Steel and Bethlehem Steel, both of which are dependent to a substantial degree upon activity in heavy industry. On the other hand, there was a mixed earnings trend among those companies engaged to a greater extent in the production of light steel products identified with consumer goods. Gains in this group were generally more moderate, and in some cases lower earnings were recorded. This was principally due

to a poor first quarter resulting from lower prices, slack automobile releases early this year, and flood damages which curtailed shipments.

Consumer industries manifested an initially greater responsiveness to natural recovery influences during the period 1933-1935. This is demonstrated in its effect upon the steel business by the fact that output of the lighter products (sheets, strip, black plate, wire, etc.) as compiled by THE IRON AGE, in 1935 amounted to 82 per cent of their total 1929 production, whereas the similar ratio for heavy steel was only about 35 per cent. The more recent revival of capital industry, especially during the three months ended June 30 last, is illustrated by the fact that operations of the United States Steel Corporation, averaging less than 47 per cent of capacity during the first quarter of 1936, were boosted to 60.8 per cent for the second. Bethlehem's performance was somewhat better than this. In defiance of the tra-

ditional lull which normally characterizes the business at this time of year, the current ingot rate of both companies as well as that of the industry as a whole is appreciably above the second quarter average.

Craine-Schrage Builds New Warehouse

THE Craine-Schrage Steel Co., Detroit, distributor of tool steel, cold-drawn steel and wire rope and sales outlet for the Detroit Steel Corp., with which it is financially affiliated, is building a new warehouse in Detroit at 8701 Epworth Boulevard, to cost \$150,000. The new building will contain 43,000 sq. ft. of floor space, the main building measuring 160 x 270 ft. and the office structure 36 x 80 ft. Four bays will serve the warehouse and a depressed track in the rear will permit the unloading of four gondola cars at a time. In the front of the warehouse there are to be eight openings for truck and trailer drive-aways.

The Detroit Steel Corp. has acquired all of the outstanding capital stock of the Craine-Schrage company in exchange for 75,000 shares of Detroit steel \$5 par value common stock. Virtually all of the Craine-Schrage stock, amounting to 13,043 shares, has been held by Clyde P. Craine, Arthur A. Schrage and W. C. Schrage, who organized the company in 1922. A year later the same men were instrumental in forming the Detroit Steel Corp.

TWENTY STEEL COMPANIES EARNED \$47,500,000 IN FIRST HALF OF 1936

	Net Income			*Earnings Per Common Share		
	Year 1935	1935 First Half	1936	Year 1935	1935 First Half	1936
Acme Steel Co.....	\$1,760,965	\$935,338	\$905,627	\$5.37	\$2.85	\$2.76
Allegheny Steel Co.....	1,151,454	500,738	947,769	1.50	0.63	1.35
American Rolling Mill Co.....	4,310,130	2,459,003	2,305,065	2.26	1.40	1.02
Bethlehem Steel Corp.....	4,291,253	1,193,611	4,034,456	0.70	0.65	0.09
Crucible Steel Co. of America.....	1,268,176	456,821	1,262,512	1.07	0.93	0.86
Eastern Rolling Mill Co.....	134,267	106,663	4,208	0.64	0.51	0.02
Granite City Steel Co.....	618,358	312,373	105,443	2.43	1.22	0.28
Gulf State Steel Co.....	141,269	36,514	207,474	0.01	0.54	0.70
Inland Steel Co.....	9,417,818	4,858,307	5,232,823	6.54	4.05	3.63
Jones & Laughlin Steel Corp.....	398,716	750,377	182,454	7.81	4.87	3.25
Ludlum Steel Co.....	637,729	345,535	434,381	1.71	1.00	0.18
McKeesport Tin Plate Co.....	2,135,096	1,036,848	740,202	7.12	3.46	2.46
National Steel Corp.....	11,136,452	6,558,802	5,182,714	5.16	3.04	2.40
Otis Steel Co.....	2,228,664	1,387,855	900,350	1.69	1.17	0.59
Republic Steel Corp.....	4,455,734	2,756,564	3,022,094	0.49	0.47	0.44
Sharon Steel Corp.....	1,009,153	540,867	480,952	2.69	1.47	1.15
Superior Steel Corp.....	46,691	6,681	87,814	0.41	0.06	0.77
United States Steel Corp.....	1,146,708	2,936,294	16,238,727	2.77	1.78	0.41
Wheeling Steel Corp.....	3,497,626	1,602,871	882,199	3.12	1.19	0.68
Youngstown Sheet & Tube Co.....	1,597,521	471,011	4,485,388	0.64	0.74	3.45

* On shares outstanding.
Italics indicate deficits.



GEN. OTTO H. FALK, Chairman of the Board, Allis-Chalmers Mfg. Co. Drawn by John Frew for The Iron Age.



Steel Tonnage Produced in July Falls Slightly Below June

OUTPUT of steel ingots in July declined fractionally from the June volume, but was 73 per cent above the tonnage produced in July, 1935, according to report of the American Iron and Steel Institute. Production of bessemer and open-hearth steel ingots in July totaled 3,922,731 gross tons, equivalent to 68.74 per cent of the industry's capacity.

Output the month before was 3,984,845 tons, or 69.83 per cent of capacity, while in July of last year 2,267,827 gross tons was produced, sufficient to maintain operations at only 39.40 per cent of capacity.

In the first seven months 25,249,066 tons was turned out, which not only exceeded by 38 per cent the production in the same period last year of 18,310,478 tons, but nearly equaled the total output for the entire year 1934 of 25,599,118 tons.

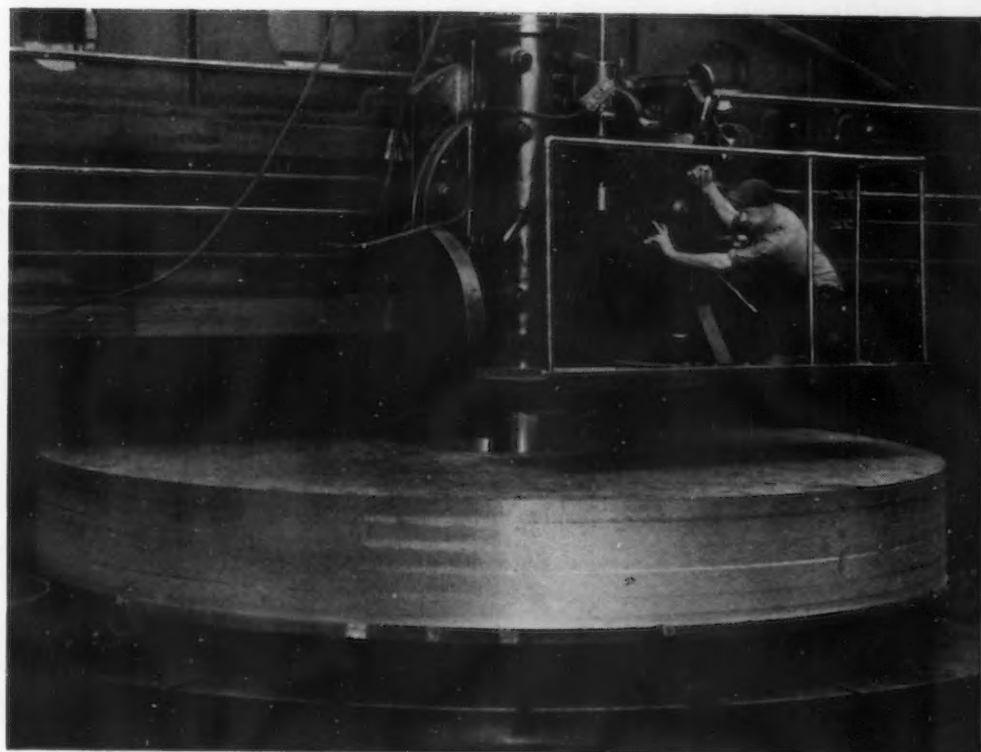
Average daily production in July was 150,784 gross tons, compared with 153,263 tons in June and 87,224 tons in July a year ago.

REPORTED BY COMPANIES WHICH IN 1934 MADE 97.91 PER CENT OF THE OPEN-HEARTH AND 100 PER CENT OF THE BESSEMER INGOT PRODUCTION

1934	Reported Production (Gross Tons)		Calculated Monthly Production All Companies		Number of Work- ing Days	Per Cent of Operation
	Open-Hearth	Bessemer	Monthly	Daily		
January	1,786,458	172,489	1,997,129	73,968	27	33.59
February	1,993,465	175,873	2,211,944	92,164	24	41.86
March	2,540,243	203,904	2,798,440	103,646	27	47.07
April	2,622,531	257,482	2,936,064	117,443	25	53.34
May	3,003,676	331,620	3,399,494	125,907	27	57.18
June	2,718,782	282,592	3,059,483	117,672	26	53.44
July	1,340,924	119,869	1,489,453	59,578	25	27.06
August	1,245,139	109,598	1,381,350	51,161	27	23.24
September	1,127,269	117,615	1,268,977	50,759	25	23.05
October	1,325,777	127,789	1,481,902	54,885	27	24.93
November	1,447,626	132,059	1,610,625	61,947	26	28.13
December	1,794,437	131,467	1,964,257	78,570	25	35.68
Total	22,946,327	2,162,357	25,599,118	83,312	311	37.38
1935						
January	2,578,531	239,858	2,870,161	106,302	27	48.02
February	2,499,744	224,336	2,774,271	115,595	24	52.22
March	2,582,628	230,810	2,865,292	110,204	26	49.78
April	2,361,275	231,916	2,640,602	101,562	26	45.88
May	2,332,042	254,796	2,633,661	97,543	27	44.06
June	2,007,862	210,487	2,258,664	90,347	25	40.81
July	2,003,151	224,456	2,267,827	87,224	26	39.40
August	2,629,768	233,361	2,915,930	107,997	27	48.78
September	2,540,264	233,737	2,825,004	113,000	25	51.04
October	2,815,510	270,719	3,142,759	116,398	27	52.58
November	2,841,199	252,163	3,150,409	121,170	26	54.73
December	2,789,015	228,392	3,073,405	122,936	25	55.53
Total	29,980,989	2,835,031	33,417,985	107,453	311	48.54
1936						
January	2,793,421	196,389	3,045,946	112,813	27	51.40
February	2,707,562	202,445	2,964,418	118,577	25	54.03
March	3,095,375	185,040	3,342,619	128,562	26	58.58
April	3,565,821	304,775	3,942,254	151,625	26	69.09
May	3,670,401	302,092	4,046,253	155,625	26	70.91
June	3,578,044	334,897	3,984,845	153,263	26	69.83
July	3,525,281	326,606	3,922,731	150,874	26	68.74

Boring An 80-Ton Flywheel

THIS 80-ton flywheel shown on a boring mill in the shops of the Westinghouse Electric & Mfg. Co. is to be part of a 6000-kw. motor generator set for a new plate mill of the Carnegie-Illinois Steel Corp. Fifteen feet in diameter, it will operate at 375 r.p.m. and equalize the load from the reversing motor keeping the variations in power drawn from the line within 25 per cent. The flywheel consists of six rolled steel plates, welded at the rim and center bore.



THIS WEEK ON THE ASSEMBLY LINE



... Production begins to decline as the eighth plant goes down for changeover in anticipation of 1937 model production.

o o o

... Steel buying strong as Ford closes on material for an initial run of 200,000 1937 jobs and Fisher Body buys sheets for Buick.

o o o

... Estimated July sales of motor cars off only 5 per cent from June, production down 3.4 per cent.

o o o

... Labor leaders offering many inducements to affiliate independents into one large group.

DETROIT, AUG. 11.

THE first noticeable trend downward in automotive production has been registered during the past week, as plant after plant reached the end of its run and entered the changeover period. On a percentage basis, however, the drop is small since the three large producers in the low-priced brackets continued to assemble cars through Friday of last week. After a week's postponement, Ford Motor Co. shut down for inventory but only for one week instead of two as planned. When Ford reopens on Aug. 17, it will be to continue the runs on 1936 models, the demand for which is still holding up remarkably well. In fact, when Ford entered its shut-down period, it had a sizable bank of orders on hand to work against upon reopening. July sales were over the 100,000 mark for the fourth consecutive month.

July sales of motor cars held up remarkably well. Sales of some units like Buick ran 140 per cent over the corresponding month last year. Polk's estimate of July sales of passenger cars in the United States was last placed at 350,000 units, based on complete registrations in six states and reports from 110 principal cities. If the estimate is fulfilled, it will show a falling-off of only 5 per cent from the June figure of 369,423 and will represent a gain of 23 per cent over the July 1935 figure of 285,178. Preliminary estimates of factory sales in the United States and Canada for July placed the figure for cars and trucks made by members of the Automobile Manufacturers Assn. at 339,755, an increase of 33 per cent over the corresponding month last year. The official Ford figure for the month is 115,137 units, bringing the total figure to

454,892, which checks very closely with earlier estimates of total production of 450,000 units. Total production for June was 470,887, which would place the July figure at 3.4 per cent below the previous month, a remarkable record and one that cannot be compared with even the boom years.

"Changeover" Period Coming

Ward's Automotive Reports estimated total output for the week ending Aug. 8 at 84,153 passenger cars and trucks in the United States and Canada, a decrease of 13,602 from the previous week's total of 97,755. In the corresponding week last year production was estimated at 51,190 cars so that the present level is extremely high for this season of the year. The lowest point in production for the entire industry is expected to be reached near the end of the month when several of the large volume producers will be down. The low point will continue for the first two weeks in September until resumption of activity begins in volume on the 1937 models. Production of the General Motors group dropped off about 10,000 units to 32,250, whereas Chrysler divisions produced 20,700 units, compared with 23,250 for the week before. Ford held its own.

Next week will see a further decline in General Motors output when Pontiac is added to the list of plants ceasing operations for changeover. Chevrolet will continue to assemble cars until the end of the month, producing an estimated output of 100,000 cars and trucks, although it is expected that the motor building and other machine shop divisions will shut down within a few days. Chevrolet built its twelve millionth car on Aug. 5,



1,182,000 units for the present run. Chrysler's Jefferson Ave. plant has ceased to assemble cars, but both Dodge and Plymouth will be in the running for at least two more weeks. Plymouth plans 44,000 assemblies for August. Ford will effect its changeover to 1937 models some time during the latter part of the month or perhaps in early September. Practically no important motor changes are contemplated on the big job, although the body will be completely new, following the lines of the Zephyr.

Steel specifications have been out on this new Ford job for some time. For several weeks past the new steel tops have been run through in the Rouge plant. Just before the shut-down last week, orders for steel for an initial run of 200,000 cars were placed. The order was surprisingly large, particularly on body sheets, since some mills anticipated a more radical change in the percentage of business let out, as Ford's new strip mill has been operating for several months. Fisher Body also entered the market in a big way last week for body sheets, particularly for its plant in Flint, where Buick bodies are fabricated. This would tend to verify the fact that Buick, as in other years, would lead off the announcement of General Motors cars for 1937. Considerable pressure is being brought to bear on early shipments for try-out purposes and the tonnages will soon be rolling in, particularly on the Buick job. Considerable business is being placed for delivery by Aug. 20 and the Ford steel is expected to be in by early September. In line with Fisher Body requirements, Ternstedt Manufacturing Division commitments are also heavy at this time.

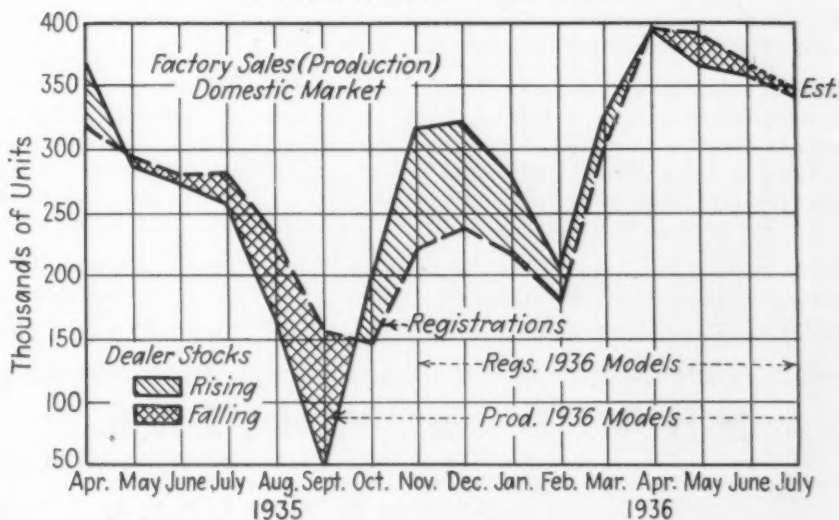
Speaking of Fisher Body, there has been some conjecture as to just what effect the new stamping plant at Grand Rapids might have on production at other points, particularly the Cleveland plant where labor difficulties were experienced in 1935. When the building was first announced, it appeared that the equipment placed at Grand Rapids would duplicate the stamping plant at Cleveland. It appears now, however, that operations at Cleveland will be continued at about the same level and that the Grand Rapids plant will represent approximately 20 per cent added capacity to meet estimated increases in scheduled output for next year of approximately the same amount. The construction of Chrysler's new stamping plant on Wyoming Ave., Detroit, however, is rather interpreted as a move to bring back into the corporation

practically all of the work that has been previously let out to stamping plants on a contract basis.

More Machinery Buying in Sight

Increases in schedules seem to be in the wind for next year. Over \$6,000,000 has been spent by Oldsmobile in the last four months for machinery and plant changes in connection with 1937 models. Of this amount, \$500,000 goes into a new engineering building rapidly nearing completion. Most of the money expended for machinery is going into a new cylinder block line which will add 40 per cent to the previous capacity of the plant and which will bring down Oldsmobile's direct labor costs to the lowest in the industry, it is estimated, for an engine of this size. More money has been spent on cylinder block lines this year than in a good many. Chrysler-DeSoto

RELATION OF FACTORY SALES TO DEALERS AND REGISTRATIONS
PASSENGER CARS - U. S. ONLY



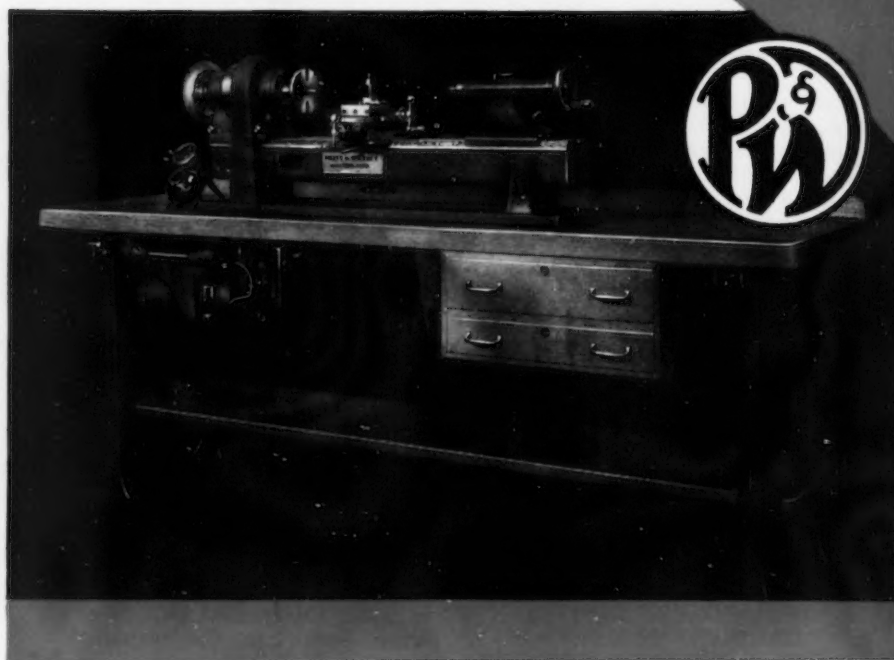
Announcing

The **NEW** PRATT & WHITNEY **10" x 20" BENCH LATHE**

WITH TRANSITORQ DRIVE

HERE is a new bench lathe—built to the finest precision standards—designed for accurate tool room work. It is a heavy, rugged machine, made to stand the strains of regular service without losing its initial accuracy. It is convenient and easy to use, and occupies a surprisingly small space for a lathe of this size. Its Transitorq drive produces any spindle speed from 200 to 2000 R.P.M.—instantly. That means efficient work on almost any material, with the right speed for the job.

This new lathe is available either ready for mounting on your bench, or already mounted to suit individual requirements. One such arrangement is illustrated.



THE new P&W 10" x 20" Bench Lathe has a bed length of 44", a 10" swing and a maximum center distance of 20". Its bed and pan are cast in one piece, with a cored hole thru the headstock leg to admit the driving belts.

Power is transmitted from the Transitorq to the headstock spindle thru four V-belts. These belts can be changed without removing the headstock spindle. The Transitorq is hung from a platform bolted under the bench, trunnion mounted on one end, with an adjusting bolt at the other end for maintaining proper belt tension.

The headstock is of very heavy design, and carries a headstock spindle $1\frac{5}{16}$ " in diameter, with a 1" collet capacity. The headstock spindle is hardened, tempered

and accurately ground. It is mounted in preloaded super-precision ball bearings, packed in special grease and permanently sealed.

The compound slide rest is entirely new. Each slide has a travel of 5". Both slides are dovetailed and are provided with gibs for wear adjustment. Movements are obtained thru screws of ample proportions mounted in ball bearings and operated by ball handles. Each screw is provided with a micrometer dial graduated to thousandths of an inch.

This new P&W Bench Lathe will fit in excellently with your tool room or precision manufacturing program. Let us send you complete information.

PRATT & WHITNEY DIVISION

NILES-BEMENT-POND COMPANY

HARTFORD, CONN., U. S. A.

has a brand new line, Chevrolet has an entirely new or almost completely rebuilt line for a radically new engine and Packard has made a composite eight- and six-cylinder line out of its 120 cylinder block line, put into operation in the early spring of 1935. Packard, one of the earliest companies to shut down, is already engaged in the manufacture of the new jobs. So is Studebaker.

One of the biggest buys on equipment during the last six weeks has been machinery for the new automatic transmission to be made at Flint for both the Buick and Oldsmobile cars. Orders for the last of this equipment were closed about two weeks ago with deliveries running about 2½ months on some of the more important components of the line. This would mean that the equipment would be in about Oct. 1, too late to make the transmission available for announcement with the first run of 1937 cars. From this, one surmises that the automatic transmission will be offered as optional equipment and will be available as an added feature later in the season. As a matter of fact, the installation of new machinery for the standard Buick transmission was only completed in the early spring of this year and there is no likelihood that this present line will be scrapped.

Rumors to the effect that Kelsey-Hayes Wheel is investing \$500,000 in plant and equipment for making hydraulic brakes for Ford Motor Co. seem to be without foundation at this time. It is true that Kelsey-Hayes has developed a hydraulic brake in which the company has been trying to interest Ford for some time. Midland Steel Products Co. has also been working along the same lines. Information

coming from a variety of sources indicates, however, that the 1937 Ford cars will be equipped with mechanical brakes of an improved type. By changes in the brake equalizing system and in the leverage ratio, ease of operation is obtained. It is said to be superior to many hydraulic braking systems now in use.

Kelsey-Hayes is increasing its foundry facilities at the present time by the addition of two cupolas and a third molding conveyor. This is to take care of increases in cast iron brake drum business. The battery of five Brackelsburg rotary melting units will be continued in use on copper-silicon steel for hubs and brake drum spiders for Ford wheels.

Detroit Shorts

Continental Motors Corp. has received an order for 1050 four-cylinder opposed-type aircraft engines from the Taylor Aircraft Co., Bradford, Pa. This motor is rated at 40 hp. and the order is the largest single unit order placed in the United States for commercial aircraft engines. Shipments will begin in September. . . . Delivery of new passenger cars in Wayne County, Mich. (Detroit) for the week of July 23-31 was the highest since May 31, an unusual occurrence, and was 70 per cent ahead of the corresponding figure a year ago, although sales for the first seven months of the year showed an increase of only 18.4 per cent. . . . Construction activity in Detroit continues at a high rate and there are a number of large projects in the wind that are as yet unidentified. . . . Ford will continue next year with the use of a cadmium-silver bearing for crankshaft and crankpin journals. Pontiac drops this type to go to a copper-

lead bearing for 1937 cars. . . . Graham-Paige is moving all its body activity from Wayne, Mich., to its Warren Ave. plant in Detroit, which is being rearranged to take care of this phase of activity. Electric Auto-Lite Co. is mentioned as a prospective purchaser of the Wayne plant.

Labor Front

The United Automobile Workers International Union formally affiliated with the Committee for Industrial Organization, met last week at an executive board meeting in Detroit. The action ratified Homer Martin's move in this direction taken in early July as president of the U.A.W. Figures were given out indicating an increase of 100 per cent in membership since the April meeting held in South Bend, but almost the entire gain may be credited to the taking in of a number of independent unions in the Detroit area. In fact, the present drive is mainly to draw in other independent units. Some of the sales lures offered are as follows: A charter of affiliation will be issued without charge to an independent union in a plant where there is no local of the U.A.W.; a paid-up card in any independent union will be exchanged for a similar card in the U.A.W.; all office supplies will be furnished at cost. In fact, it is the stated policy of the U.A.W. to remove all obstacles that stand in the way of amalgamation and to cooperate fully with representatives of independent unions in working out satisfactory arrangements in order to bring about the unity they seek. Officers of the union have undertaken to raise a fund of \$250,000 to finance this amalgamation, together with an individual organization drive.

OLDSMOBILE'S new \$500,000 engineering building is nearing completion at Lansing. Over \$6,000,000 is being spent by Oldsmobile this year for this project and factory additions, including machinery for a cylinder block line that will step up production 40 per cent, cut costs to the bone.



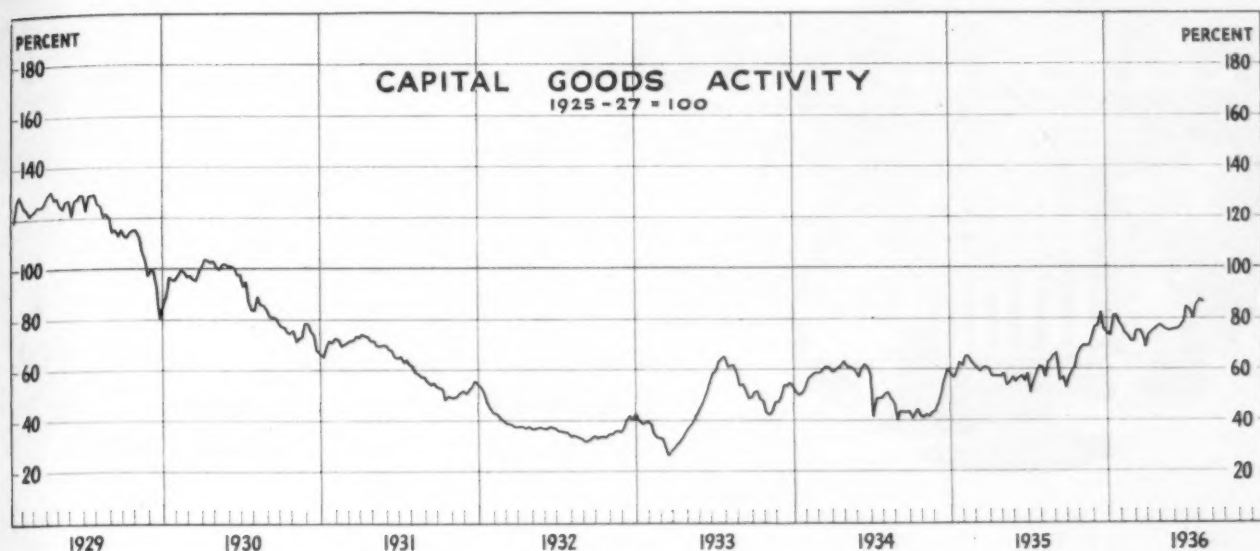
Current Metal Working Activity Statistically Shown

These Data Are Assembled by The Iron Age from Recognized Sources and Are Changed Regularly as More Recent Figures Are Made Available.

	June, 1936	May, 1936	June, 1935	Six Months, 1935	Six Months, 1936
Raw Materials:					
Lake ore consumption (gross tons) ^a	3,941,426	3,882,173	2,198,757	14,355,992	19,790,633
Coke production (net tons) ^b.....	.....	3,837,323	2,660,113	17,022,748	.....
Pig Iron:					
Pig iron output—monthly (gross tons) ^c	2,586,240	2,648,401	1,552,514	9,799,000	13,528,226
Pig iron output—daily (gross tons) ^c	86,208	85,432	51,750	54,138	74,331
Castings:					
Malleable castings—production (net tons) ^d ...	43,766	45,027	27,548	231,897	274,092
Malleable castings—orders (net tons) ^d	42,848	44,136	25,668	220,228	265,055
Steel castings—production (net tons) ^d	70,323	64,246	27,665	180,925	341,582
Steel castings—orders (net tons) ^d	94,345	63,950	30,257	182,370	423,544
Steel Ingots:					
Steel ingot production—monthly (gross tons) ^e	3,984,845	4,046,253	2,258,664	16,042,651	21,326,335
Steel ingot production—daily (gross tons) ^e ...	153,263	155,625	90,347	103,501	136,707
Steel ingot production—per cent of capacity ^f ..	69.83	70.91	40.81	46.75	62.29
Finished Steel:					
Trackwork shipments (net tons) ^g	6,507	7,314	4,210	21,575	34,592
Steel rail orders (gross tons) ^g	13,200	8,800	22,250	275,057	596,348
Sheet steel sales (net tons) ^g	261,439	191,511	128,957	1,144,985	1,208,086
Sheet steel production (net tons) ^g	210,448	224,056	143,309	1,225,893	1,274,658
Fabricated shape orders (net tons) ^g	128,520	145,553	120,690	518,990	750,671
Fabricated shape shipments (net tons) ^g	150,790	134,623	91,608	504,638	677,414
Fabricated plate orders (net tons) ^g	51,999	51,257	17,914	99,462	229,482
Reinforcing bar awards (net tons) ^g	14,505	19,725	10,585	110,505	176,595
U. S. Steel Corp. shipments (tons) ^h	886,065	984,097	578,108	3,553,999	5,031,350
Ohio River steel shipments (net tons) ⁱ	109,455	86,004	80,620	408,648	465,621
Fabricated Products:					
Automobile production, U. S. and Canada ^k ...	470,887	480,571	376,993	2,373,173	2,596,356
Construction contracts, 37 Eastern States ^l	\$233,054,600	\$216,070,700	\$148,005,200	\$696,507,000	\$1,237,731,000
Steel barrel shipments (number) ^d	702,132	721,021	501,730	3,032,964	3,845,761
Steel furniture shipments (dollars) ^d	\$1,470,195	\$1,451,199	\$1,137,173	\$6,898,572	\$9,211,418
Steel boiler orders (sq. ft.) ^d	1,130,886	723,343	392,345	2,673,633	4,661,617
Locomotive orders (number) ^m	24	10	3	16	122
Freight car orders (number) ^m	4,320	9,677	5,151	6,583	26,554
Machine tool index ⁿ	128.8	118.9	91.1	76.7	124.5
Foundry equipment index ^o	141.4	165.4	100.2	94.6	.....
Foreign Trade:					
Total iron and steel imports (gross tons) ^p	59,910	59,391	33,208	182,891	319,145
Imports of pig iron (gross tons) ^p	16,793	15,296	6,583	53,486	97,507
Imports of all rolled steel (gross tons) ^p	15,715	20,994	19,678	92,972	123,768
Total iron and steel exports (gross tons) ^p	294,951	314,950	289,687	1,595,934	1,631,591
Exports of all rolled steel (gross tons) ^p	100,303	93,686	65,319	411,313	533,490
Exports of finished steel (gross tons) ^p	89,287	86,346	60,643	365,105	487,314
Exports of scrap (gross tons) ^p	186,696	217,439	215,098	1,115,942	1,050,273
British Production:					
British pig iron production (gross tons) ^r	644,100	661,000	529,300	3,173,000	3,749,100
British steel ingot production (gross tons) ^r	965,900	963,000	770,000	4,801,200	5,744,200
Non-Ferrous Metals:					
Lead production (net tons) ^s	38,818	41,551	33,002	192,479	224,015
Lead shipments (net tons) ^s	37,736	33,125	26,978	195,432	215,737
Zinc production (net tons) ^t	44,947	44,905	34,637	209,876	253,732
Zinc shipments (net tons) ^t	41,654	43,977	29,353	214,972	252,487
Deliveries of tin (gross tons) ^u	7,795	5,235	4,615	28,390	37,020

† Three months' average.

Source of figures: ^a Lake Superior Iron Ore Association; ^b Bureau of Mines; ^c THE IRON AGE; ^d Bureau of the Census; ^e American Iron and Steel Institute; ^f National Association of Flat-Rolled Steel Manufacturers; ^g American Institute of Steel Construction; ^h United States Steel Corp.; ⁱ United States Engineer, Pittsburgh; ^j When preliminary, from Automobile Manufacturers Association—Final figures from Bureau of the Census; ^k F. W. Dodge Corp.; ^l Railway Age; ^m National Machine Tool Builders Association; ⁿ Foundry Equipment Manufacturers Association; ^o Department of Commerce; ^p British Iron and Steel Federation; ^q American Bureau of Metal Statistics; ^r American Zinc Institute, Inc.; ^s New York Commodities Exchange.



Weekly Index of Rate of Activity in Capital Goods, Adjusted for Seasonal Variation, 1925-27 Average = 100

Weekly Index Numbers of Capital Goods Activity

(1925-27 Average = 100)

Last week	86.6	Same week 1933	61.1
Preceding week	87.2	Same week 1932	33.8
Same week last month	83.5	Same week 1931	58.9
Same week 1935	57.1	Same week 1930	89.0
Same week 1934	50.9	Same week 1929	124.7

H EAVY industrial activity lost some ground last week, as certain businesses receded more than seasonally. THE IRON AGE index of capital goods operations, which is calculated weekly with adjustment for normal seasonal change, showed a net loss for the six-day period of 0.6 points. The index was established at 86.6 per cent of the 1925-27 selected average. Separate series of the composite index revealed conflicting movements. Automobile production was a large loser as more plants in the Detroit

area closed for inventory and preparation for new model production. Steel mill operations, however, reached a new peak for the year. The lumber shipments and heavy construction indices registered gains, but the Pittsburgh index lost fractionally.

At 86.6 per cent of "normal," the combined index is about $3\frac{1}{2}$ per cent above its weekly level a month ago, $51\frac{1}{2}$ per cent higher than in the same period a year ago and 70 per cent ahead of the 1934 figure for the comparable week.

Components of The Index (1) Steel Ingot Production Rate, from THE IRON AGE; (2) Automobile Production, from Cram's Reports, Inc.; (3) Revenue Freight Carloadings of Forest Products, from Association of American Railroads; (4) Industrial Productive Activity in Pittsburgh District, from Bureau of Business Research of University of Pittsburgh; (5) Heavy Construction Contract Awards, from Engineering News-Record.

Employment Gains Made in June

The National Industrial Conference Board reports gains in employment, hours worked, and money earnings during June, 1936, as the result of a regular inquiry in 25 manufacturing industries. Real earnings, however, declined because of higher living costs.

Hourly earnings in these 25 industries average 61.7c. in June compared with 61.5c. in May, an increase of 0.3 per cent. Weekly

earnings averaged \$24.29 in June against \$24.08 in May, a gain of 0.9 per cent. This advance, however, was more than offset by the rise in the cost of living, with the result that real weekly earnings declined 0.6 per cent. The average work-week was 39.2 hours in June and 39 hours in May, an increase of 0.5 per cent.

The number of workers employed rose 0.7 per cent from May to June, total man-hours worked, 1.2 per cent, and payrolls, 1.5 per cent. Although there was a net gain in total man-hours worked,

in 10 industries fewer hours were worked in June than in May, the declines ranging from 0.3 per cent in the manufacture of hardware and small parts to 5.4 per cent in the manufacture of agricultural implements.

Since a year ago substantial gains have been made. Hourly earnings have risen 2.8 per cent; the average number of hours per week, 8.9 per cent; money weekly earnings, 12.9 per cent, and real weekly earnings, 9.7 per cent; employment, 7.4 per cent; total man-hours, 16.8 per cent, and payrolls, 21.3 per cent.

WASHINGTON



By L. W. MOFFETT
Resident Washington Editor,
The Iron Age

... Administration, fearing loss of craft unionist votes, is trying to patch the Green-Lewis Humpty-Dumpty.

... Washington gossip paints Lewis as 1940 Presidential candidate, backed by new deal forces on "quid pro quo" basis.

... Fallacy of "solid labor vote" is shown in fact that president of Carpenters' union, largest in A. F. of L., is Republican National Committeeman.

... Federal Trade Commission is walking gingerly on thin ice of the Patman-Robinson pond, fearing plunge into cold waters of unconstitutionality.

WASHINGTON, Aug. 11.—Strenuous efforts are being made quietly to knit together the broken ranks of the American Federation of Labor, which were ripped wide open last Wednesday when the Executive Council of the Federation voted, 13 to 1, to suspend 10 union affiliates unless by Sept. 5 they withdraw from the rebellious Committee for Industrial Organization, headed by John L. Lewis. The backstage moves are inspired principally by fear of political repercussions, and are being made by New Deal representatives. Deep apprehension is felt by them that the schism will sharply divide the organized labor vote which Lewis and his colleagues are so earnestly trying to commit to President Roosevelt for his reelection. Nationally the labor campaign for the New Deal is being conducted by the so-called Labor Non-Partisan League, under the direction of Major George L. Berry, who is kept so busy in this capacity propagandizing the movement to muster both the organized and unorganized labor vote for the New Deal that he only intermittently finds time to devote to his

"official" duties as "Coordinator" for Industry. Seeing that his efforts to coordinate industry have been abortive, Major Berry no doubt hopes for better success in coordinating the labor vote. But in this direction also it is evident that, ballyhoo to the contrary, the busy major is not achieving his purpose to the degree he had hoped.

The split in the ranks of organized labor has unquestionably weakened the movement, whose chief active sponsors are heads of the C. I. O. unions. Lewis has been looked upon as the spearhead of the drive, under the guise of organizing the steel industry, to capture the labor vote of Pennsylvania, whose 36 electoral votes the New Deal is so desperately seeking. While, of course, the C. I. O. has a great deal to say about its drive to organize steel and other mass industries along vertical lines, it is a widespread conviction that the prime purpose is political in character. It is strongly doubted that the C. I. O. seriously believes it will be successful in unionizing steel or otherwise achieving anything like the ambitious program it has announced. Rather the belief

prevails that the immediate objective is to build up a heavy labor vote for the New Deal. The long range objective is held to be the organization of a Labor party ready to enter the 1940 national campaign with Lewis as its Presidential candidate. The idea has been ridiculed. Nevertheless it persists. The possibility of such a party assuredly is to be seen. For if the labor leaders should be successful in bringing about the reelection of Mr. Roosevelt they would clearly have an extremely strong claim on him during his second administration, and be in a position to demand New Deal support in the next campaign, a fact which opens speculation as to the possibilities of the Labor party either absorbing the New Deal or splitting with it at that time, if not sooner.

Union Voters Must Choose

Administration forces already were said to have been not only gravely concerned, but embarrassed, because of the row within the ranks of organized labor. They now find themselves in an even more uncomfortable position since

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Chairman of the Board.



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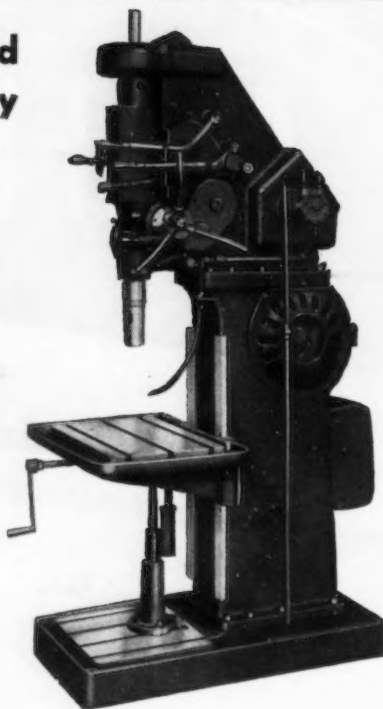
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the suspension vote of the Federation Executive Council. It offers the prospect that the New Deal will have to choose between the two sides, the industrial and the craft unionists. While it is not suggested that either side will vote solidly one way or the other, it is believed that unless the dissension in the ranks of organized labor is healed it will draw from the New

Deal many craft union votes it would otherwise get, and such votes total some 2,000,000 against the industrial union votes of some 1,000,000. It is the industrial union leaders who are campaigning the most vigorously for the New Deal. This being so, it would seem that if it were found in a position where it was forced to select sides it would have to turn to the minority

side, which, politically, would be bad. Of course, the effort is being made to avoid such a situation as well as to bring together the two factions. Hence the quiet but lively activity in this direction. New Deal efforts to prevent the split, however, were unsuccessful. So it now remains to be seen if the factional bitterness now prevailing can be assuaged—it is not thought it can be entirely wiped out—and the forces again brought together to present a more united political front. And manifestly organized labor itself is greatly concerned over the break within its own ranks because of the effect on its movement through the probability of seeing two rival factions and consequently a much weakened force to deal with industry.

Dubinsky's Effort to Avert Split

A last-minute effort to prevent the split was made by David Dubinsky, president of the International Ladies' Garment Workers Union, and the only industrial unionist on the Executive Council, who recorded the single dissenting vote against suspension. But in view of the sharp words and challenge of the contending factions which had gone on previously, it was evident suspension would be voted, though it was made subject to recall upon capitulation by the rebel unions by withdrawing affiliation from the C. I. O. Such capitulation is not now in sight. On the contrary, Lewis defiantly declared that the C. I. O. would not disband and that the vote would have no effect on its campaign to organize steel and other industries. But the craft unionists were equally as bitter against the C. I. O. At the Executive Council meeting they were unsparing in their attack on Lewis in particular, led by John P. Frey, president of the Metal Trades Department, who made the charge that the C. I. O. was a dual or rival organization, that it was usurping the powers of the A. F. of L., and was fomenting rebellion within the Federation. A personal foe of Lewis, W. L. Hutcheson, president of the United Brotherhood of Carpenters, a member of the Executive Council, served notice that if the council did not act against the C. I. O., his union, whose membership is exceeded only by that of the rebellious United Mine Workers, of which Lewis is president, would withdraw from the Federation. President Green of the A. F. of L., who votes in the council only when it is necessary to break a tie, was also firm in his opposition to the C. I. O. The council statement on the vote reflected the position which Green had repeatedly taken.

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It said the council could not condone a rival organization's existence "without sacrificing its self-respect or making an unconditional surrender to a minority group composed of members who are in open rebellion to democratic procedure and majority rule as exemplified at the last convention of the American Federation of Labor." These expressions plainly reflect the depth of the animosities between the two factions and the difficult task of uniting them again, if that is found possible. Lewis and other "rebels" challenged the power of the Executive Council to suspend the unions. Lewis in his criticism said the council "would not trust the judgment of the (A. F. of L.) convention which meets in November but had "hastened to prejudice the action of the convention by stripping the defendant unions of their voting privilege." In the absence of delegates from the 10 unions, the November convention in Tampa, Fla., undoubtedly would revoke their charters. If the suspension order is made effective they would be denied the right of the floor, unless, demanding that they be seated, they should get a favorable vote by the Audit and Credentials Committee, which is unlikely, since Green, as president, would appoint the committee.

Amalgamated Is Among Suspended Unions

Among the 10 suspended unions is the Amalgamated Association of Iron, Steel and Tin Workers, recently taken over by the C. I. O., after it had been sharply reminded by Lewis that it must decide between the C. I. O. and the A. F. of L., and was offered a contribution of \$500,000 to "cooperate" with the C. I. O. in the steel drive. In view of the costly quarters maintained by the C. I. O., at headquarters in Washington and in the field, coupled with its activities, the fund no doubt is being subject to a heavy drain. Lewis, however, in reaching out for members from other industries, apparently is getting additional funds. His proposed, if not expected, membership is 4,000,000, according to a statement he made as a challenge to the Executive Council vote. Such a membership would exceed by about 1,000,000 the A. F. of L. membership, including its 10 rebel unions, and obviously would put the C. I. O. in a dominant position as a new labor organization and in a strong position as a budding Labor party. C. I. O. adherents claim that the Executive Council vote created so much resentment among organized labor forces that it has stimulated C. I. O. membership greatly already. On the other

hand, craft unionists say their membership has been increased by reason of the vote. All of the statements obviously are subject to heavy discount. Hutcheson has been named as head of the labor division of the Republican National Committee and as such he no doubt will make every effort possible to get Landon votes, not alone for the sake of Landon, but for the sake of combatting the campaign of Lewis. Daniel J. Tobin, president of the International Brotherhood of Teamsters, has been made chairman of the Democratic National Committee. Cer-

tainly this looks like old time campaigns where organized labor groups were political opponents, and indicates that just as in the past there will be a divided organized labor vote at the forthcoming Presidential election — and it may point to dimming of prospects of the much-talked-of Labor party.

The entire situation throws the white light on the fact that "big business," as symbolized by steel, has been dragged into the political campaign as never before, for the purpose of making a demagogic appeal.

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Steel Industry Gets Another Spanking in New Berry Report

WASHINGTON, Aug. 11.—New Deal Political Strategist George L. Berry has made public a distorted blurb on the iron and steel industry. Functioning on this occasion as "coordinator for industry," Major Berry, through the Council for Industrial Progress, has pieced together another of a series of Labor Department, Bureau of Census and other government figures to attack the industry. The point he seeks to make is that there has been a severe decline in employment in the industry and that wage increases have fallen far short of the productivity of wage-earners. The upshot, so the "study" concludes, is an "unbalanced condition" in the industry. As if implying the horse and buggy idea that mechanization and improved methods of manufacture should be abolished in order to employ more labor, the pretended situation is attributed to labor devices, mass production and increases in operating efficiency. Also inferentially, if not directly, the major suggests the necessity of renewing government regimentation of industry, through a revived NRA or some such alternate organization of Federal bureaucracy.

The report covers the period 1914-1933. It states that "The yearly average number of wage-earners in the iron and steel industry, as shown by the study, was lower at the end of the 20-yr. period than at the beginning, standing at 617,776 in 1914, rising to 857,764 in 1919 and 880,882 in 1929, then dropping to 554,108 in 1933. The average yearly wage stood at \$683 in 1914 and \$903 in 1933."

The trouble with these figures is that they are extremely wide of the mark. Their basic fault lies in classification of the iron and steel industry. The "study" does not at all confine itself to the iron and steel industry. The iron and steel industry proper as recognized by the industry is made up of blast furnaces, steel works and rolling mills. The Berry study embraces the Bureau of Labor Statistics, Department of Labor, general classification known as "Iron and steel and their products, not including machinery." Under this classification are the iron and steel industry, listed as "Blast furnaces, steel works and rolling mills," and 12 of its consuming lines, large and small, as well as cast-iron pipe. These consuming lines are bolts, nuts, washers and rivets; cutlery

(not including silver and plated cutlery) and edge tools; forgings, iron and steel; hardware; plumbers' supplies; steam and hot-water heating apparatus and steam fittings; stoves; structural and ornamental metalwork; tin cans and other tinware; tools (not including edge tools, machine tools, files and saws) and wirework.

A Different Picture

Manifestly, figures on wages, employment and production based on

this broad classification give a picture entirely different from that which would be given if they were confined to the iron and steel industry itself. The report also is at fault because it stops at 1933. Brought up to date it would show that employment in iron and steel, due to mechanization and shorter hours, coupled with improved consumer demand, is near the 1929 peak of 450,000 and receives the highest wage in the industry's history at an average of 65.5c. an hour. Plainly without labor devices, mass production and increases in operating efficiency, with resulting lower prices and increased consumer purchasing power, neither production nor employment would be on so high a level as they are



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at present. The relatively increased productivity of wage-earners as against a smaller increase in wages, of which the report complains, could not prevail, nor could the gain in wages, if it were not for modernization. But inasmuch as these figures on productivity and wages are based on figures for "Iron and steel and their products, not including machinery," of course they are not applicable to the iron and steel industry.

"The trend of steel employment has been sharply upward and there is absolutely no indication that the substitution of mechanical equipment for back-breaking human effort has created the great amount of technological unemployment which some critics of industry are

inclined to attribute to mechanization," says the American Iron and Steel Institute in its pamphlet, "The Men Who Make Steel," issued in May. "Instead of machines replacing men in the manufacture of steel, machines have, on the contrary, created additional employment by permitting a greater output to be sold at lower cost in ever wider markets."

Back to Hard Labor!

The criticism of mechanization is also curious in another direction. Much has been said by labor about the hard, hot work in the steel industry. Now when mechanization removes the load on labor it complains that modern equipment displaces workers!

After giving figures on production, wages and employment for 1914-1933 in what it terms the "iron and steel industry," the report refers to an analysis of the iron and steel and "other important industrial groups during 1919-1919. It proceeds to state that "the major portion of the increased production was achieved by either maintaining employment at or about the same previous level, or by establishing a new level of employment requiring fewer workers, while the wage level remains practically unchanged.

Then, viewing this condition with alarm, the report comments suggestively as to the necessity of renewed regimentation, as follows:

"If this condition does constitute a serious menace to our economic well-being, then two questions of great potential possibilities may well receive the serious consideration of every American citizen:

"1. Is it not possible, with industry's productive ability constantly increasing, that even though we come out of a depression through the working of 'natural economic forces,' production can swing ahead at full speed so fast and can so far outstrip purchasing power that we will not even reach a period of 'normalcy' before being plunged into the depths?

"2. Are not the very efficiencies of our ever-increasing productive ability of such a nature that it is questionable whether we can come out of future depressions by placing our dependence solely on the operation of 'natural economic forces'?"

"The second question becomes increasingly pertinent when we consider the large number of unemployed who are available for work at such small wages that it would be virtually impossible to generate sufficient purchasing power to start industrial activity more than feebly on the upturn."

The inference seems to be that government regulation looking to shorter hours, increased wages, regardless of the financial condition of the industry, or a return to the days of the forge and hammer and handmill, is necessary to eliminate the "unbalanced condition."

The New Deal Did Not Do It

Stopping with 1933, the report reflects conditions which are much improved today, not on account of, but despite, the New Deal. In 1933, as in other depression years, the iron and steel industry suffered heavy losses, operated at a low rate and expended millions of dollars for welfare work for its employees

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and to spread employment. In 1934, the industry showed a loss of \$25,000,000, yet through higher wages and increased employment added \$100,000,000 to its payroll. Even in 1935 earnings of 127 companies were only \$62,961,961 and taxes were nearly double the total of \$38,926,401 paid by these companies to their stockholders. Taxes were equivalent to a full year's pay of 57,360 employees. In that year the United States Steel Corp., after being in the red for four consecutive years, emerged with a profit of only \$1,146,000, representing 15c. per ton of finished steel. It paid \$38,500,000 in Federal, State and local taxes, equivalent to \$5.14 per ton of finished steel produced! The tax per ton of finished steel produced by the industry as a whole

during the period, 1929-1935 was \$3.38.

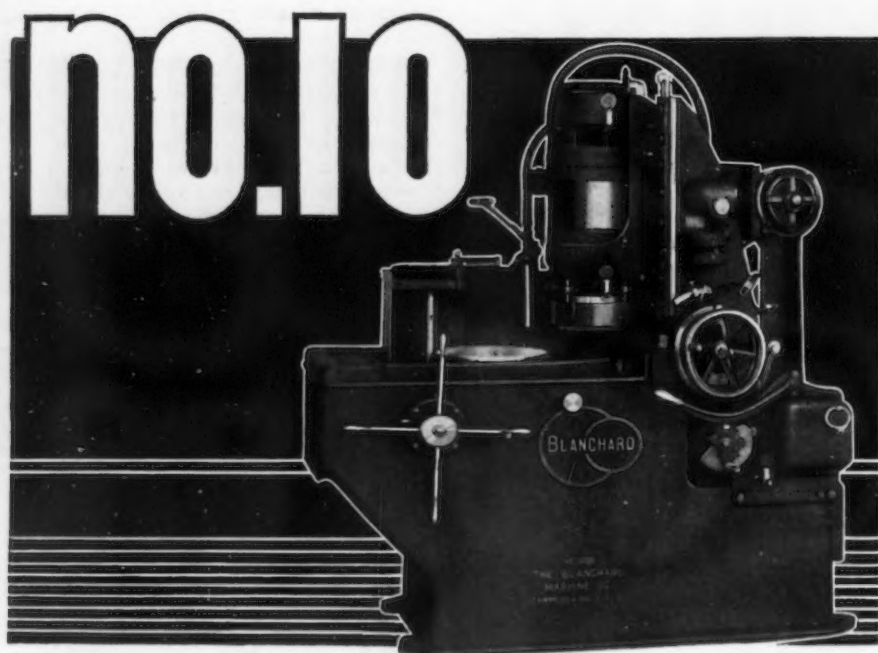
In view of this situation, Berry might well recommend a lifting of the heavy hand of governmental regulation, huge expenditures, and constant political harassment and give industry a freer hand to work back to real recovery and absorption of more workers. Indeed, the report, in harping on the economic menace of a return to "pre-depression conditions," smacks of a confession that the many New Deal tricks of magical "economic planning" have proved a distinct disappointment. Interestingly enough, on the heels of the Berry report, the Department of Commerce in its World Economic Review for 1935 sounded a warning against tremendous government expenditures. It

saw in them, as industry has seen from the outset, an obstacle to business recovery. Moreover, it took a whack at taxation and proposed elimination of "uncertainties prevailing in connection with future taxation and other budgetary problems."

Appeals For Help

Berry also followed his report on the "iron and steel" industry with an appeal to more than 2000 officials of chambers of commerce to do something about the unemployment situation. These business groups, so frequently assailed in the past by Berry, were urged to hold meetings and lend their efforts to solution of the problems of unemployment, Federal relief, labor conditions and "maldistribution and unwise use of the national income." Emphasis was laid on "the danger of false evaluation of 'recovery'" and said that any practical program looking toward economic stability must provide for return of the unemployed to "gainful occupation in private enterprise." So, while the Major has no hesitancy, as do other New Dealers, in abusing industry, he likewise wants to use it—and it would be quite handy now that the political campaign is under way and the matter of genuine recovery is so important to vote-getting.

The Major also has been kept busy as head of the so-called Labor Non-Partisan League, a build-up for a Labor party in 1940, which assembled here yesterday on the Major's call, simultaneously with the return of President Roosevelt to Washington. The league avowedly was set up by organized groups to promote the candidacy of Mr. Roosevelt for reelection as the immediate objective. A message from him was read in which the President said he had implicit faith that "we shall find our way to progress through law." The timing of the meeting also reflected the fine strategy of the Major. Set immediately after the report on the iron and steel industry, it undoubtedly was intended that labor's attention should be directed to the report. Moreover, use of the iron and steel industry as a football of politics was further seen in the fact that among the chief speakers at the conference were John L. Lewis, chairman of the Committee for Industrial Organization, and Sidney Hillman, Socialist, president of the Amalgamated Clothing Workers, also a prominent C. I. O. worker. Both are members of the league. Major Berry apparently desired to show that his league is back of the C. I. O. in its efforts to organize the steel industry and took full advantage of the occasion to propagandize the fact.



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Denies Extension of Rates

WASHINGTON, Aug. 11.—The Interstate Commerce Commission on Aug. 3 denied the petition filed on July 27 by the railroads to convert existing emergency charges into permanent rates. The surcharges are to expire on Dec. 31 under a recent decision of the commission.

The carriers petitioned the commission to permit them to translate the emergency charges into permanent rates and to this end, in order to do so, asked for so-called fourth section relief; that is, to disregard the long-and-short provision of the act. The existing emergency charges would thereupon be made part of the regular tariffs, subject to protest and suspension.

By denying the petition, the commission now makes it necessary for the railroads to file individual tariffs or some other method if they seek to continue any of the present emergency rates beyond Dec. 31.

International Thin Sheet Cartel Formed

The International Thin Sheet Cartel agreement comprising two sections, one dealing with thin black sheets and the other with galvanized sheets has been formally signed in Brussels. Under the agreement Britain obtains 28 per cent of the allotment for thin black sheets, and for galvanized sheets Britain and Belgium's combined share amounts to 90 per cent. Under the agreement Britain will obtain a larger share than heretofore.

There is little doubt that this cartel would have been formed earlier but for difficulties connected with export prices.

Rudisill Soil Pipe Co. Sold to Wiley Alford

RUDISILL SOIL PIPE CO., Anniston, Ala., has been sold to Wiley Alford by C. A. Hamilton, who is also president of the Alabama Pipe Co. and who owned the company individually. Mr. Alford has been with the Walworth Mfg. Co. at its Attalla, Ala., plant for a number of years and will now leave that company to take active charge of the pipe plant.

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F.T.C. Walking Gingerly On Thin Patman-Robinson Ice

PERPLEXITIES of the Patman-Robinson anti-price discrimination act are forcing the Federal Trade Commission to move cautiously in its administration. The constitutionality of a number of provisions of the law, an amendment to the Clayton anti-trust act, has been challenged widely by legal authorities and it is evident that before the commission issues complaints it desires to make as sure as possible of its ground, inasmuch as they are likely to be tested in the courts. It is the policy not to disclose the names of complainants at any time, while names of respondents are made known only when the commission issues formal complaints. It is said, however, that the pending complaints, which the commission may or may not find justified, have been made against manufacturing concerns and involve charges of price discrimination.

Nor will the commission give advance interpretations of the act. They will be made known only as it proceeds under individual cases. The same attitude is being pursued by the Department of Justice. Both branches of the government therefore are following traditional procedure in not providing interpretations precedent to official action.

This point has been emphasized because of misleading reports that advance interpretations of the Patman-Robinson act would be made. They grew out of a recent conference at the Department of Justice between members of its staff and members of the commission staff. In a joint statement of Department of Justice and the Federal Trade Commission it was stated that the purpose of the conference was to formulate policies of cooperative action between the anti-trust division of the Department of Justice and the FTC for the enforcement of the Patman-Robinson act. Arrangements were made, the statement said, for consultation and cooperation by the staff of the Department of Justice with the FTC in investigations and other activities in order that the two agencies might agree upon common policies with reference to the act and coordinate their functions in connection with its administration. Beyond this general declaration nothing was forthcoming. Present at the conference were Attorney General Homer S. Cummings, Assistant Attorney General John Dickinson, in charge of the anti-trust division; Commissioners Edwin L. Davis, William A. Ayers, and Robert E. Freer of the FTC

and members of the staffs of the two government branches.

Aside from facing the difficulties of enforcing a piece of legislation that has been variously attacked as unconstitutional, contradictory and ambiguous, the commission is handicapped by a lack of funds, strange as that may seem in view of the billions that are carelessly poured from the Treasury. Insufficient money makes it impossible for the commission to increase its personnel to administer the act. Consequently, it is doubted that, beyond making investigations, the commission can proceed under the new law before early next year. There are reports, however, that complaints may be issued this fall in the event the commission finds they are justified on the basis of investigations now under way.

It is widely predicted in legal sources that the Patman-Robinson act is so loosely drawn that a number of its provisions are bound to be held illegal and that it will have to be redrafted by Congress.

Fuller-Warren Plant To Be Auctioned

ASSETS of the Fuller-Warren Co., Milwaukee, pioneer manufacturer of enameled stoves and ranges, in receivership since 1934 and operated until continuation was found impossible early in 1936, will be offered for sale at public auction on Aug. 31, first in parcels and then in its entirety. The property, situated at 2506 North Thirty-second Street, is currently appraised at \$350,589, but was reported at a net worth of upward of \$1,500,000 a decade ago.

On a site of nine acres there are two foundries, a main structure containing a large enameling shop, machine shop, sheet metal department and assembling shop built about 10 years ago, and the original plant, recently used as a warehouse. Land and buildings are appraised at \$269,400. The foundries at present are held under lease by the General Foundries Co.

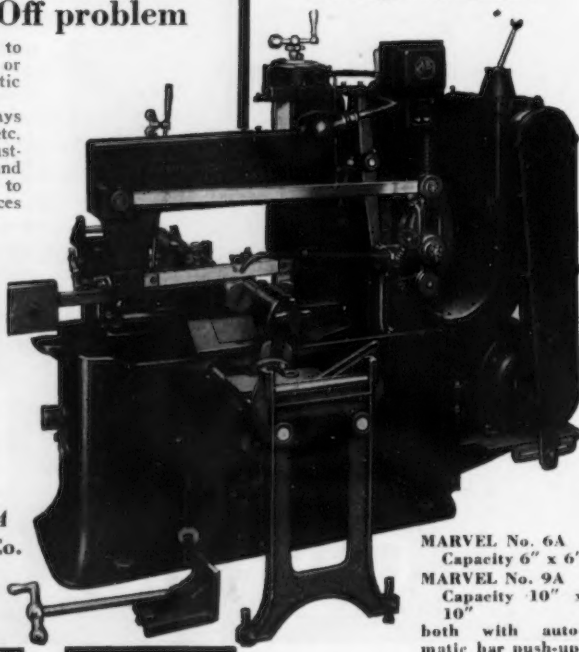
Total indebtedness of Fuller-Warren Co. now is represented by \$109,000 in mortgages plus accumulated interest; \$40,000 in taxes and \$100,000 in other indebtedness. The mortgage is held by the Marine National Exchange Bank of Milwaukee.

Automatic Bar Push-up Solves Cutting-Off problem

Wherever duplicate pieces are to be cut from bars, whether few or many, a MARVEL Automatic Saw is the thing. It eliminates all costs and delays for special tools, stock rests, etc.—reduces setting-up to adjustments for length, speed and feed. It cuts running time to a fraction, will cut off 10 pieces 6" round steel or 160 pieces 1½" (other sizes proportionately) every hour floor to floor. It saves man hours—requires no more attention than an automatic screw machine—and, gets more pieces per bar for chip loss is reduced to the thickness of a saw blade. Fully ball bearing construction, these new heavy duty production saws have the stamina for continuous high speed operation. They are the last word in cutting-off equipment.

Write for Bulletin 600A
Armstrong-Blum Mfg. Co.
"The Hack Saw People"
349 N. Francisco Ave.
CHICAGO, U. S. A.

MARVEL Automatic Sawing Machines



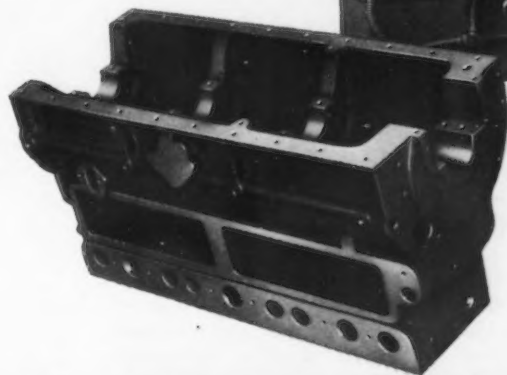
MARVEL No. 6A
Capacity 6" x 6"
MARVEL No. 9A
Capacity 10" x 10"
both with automatic bar push-up.

Way Type Multiple Drillers "HOLEUNIT" Construction

- NATCO HOLEUNITS are completely self-contained and no connections other than electrical are required. They are flexible and interchangeable . . . and they make possible the building of highly specialized drilling and boring machines for high production . . . yet these units are standard in every respect.

- Equipped with a semi-automatic hydraulic feed, NATCO HOLEUNITS will operate at any angle. They may be arranged in groups to perform all the required operations on a casting with a single handling. Should the part for which the units are arranged be altered or discontinued, it is only necessary to rearrange the units, equip them with new spindle boxes and the machine may be used for an entirely different piece of work.

- NATCO HOLEUNITS are built in a variety of sizes and capacities. Call, wire or write for a NATCO representative. Investigate these NATCO HOLEUNITS TODAY.



Shown above is a NATCO Way Type machine . . . distinctly a single purpose multiple driller built to drill a total of 57 holes in the bottom and two sides of a large cast iron cylinder block . . . yet the machine is built of standard NATCO HOLEUNITS . . . and may be altered as required with a minimum of expense.

Here is the **NATCO** method of Building FLEXIBLE High Production Drilling, Boring and Tapping Machines

- The installation of modern efficient manufacturing equipment is the first step to lower costs and increased profits. NATCO Engineers will be glad to study your drilling, boring and tapping problems. Without any sort of obligation on your part we will make a careful survey and lay our recommendations before you . . . then you be the judge as to whether they can

increase your profits. Send in your prints or call a NATCO representative today.

- Chicago Office, 2009 Engineering Bldg., 205 West Wacker Drive; Detroit Office, 409 New Center Bldg.; Factory and Home Offices, **The National Automatic Tool Co., Richmond, Indiana, U. S. A.**



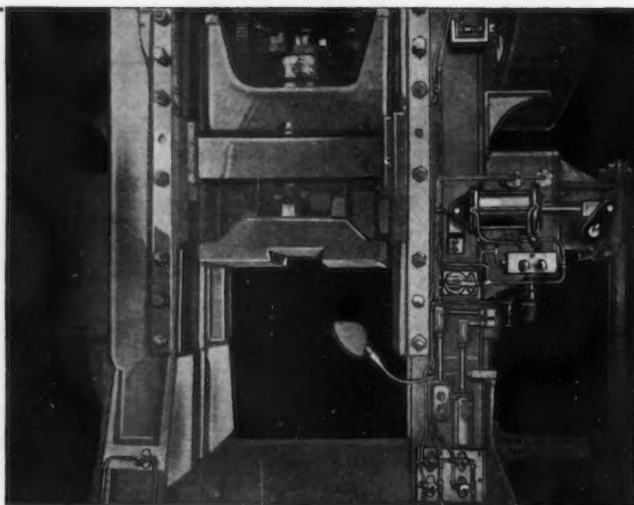
NATCO

Drilling, Boring,
and Tapping Equipment

SAFETY OPERATING SYSTEMS FOR PRESSES

The safe operation of presses is now being efficiently accomplished by the use of HOPKINS AIR OPERATED REMOTE CONTROL VALVE SYSTEMS. Their versatility in application allows for countless varieties of installations, one to meet every need. These systems are for use as automatic or semi-automatic controls for other machines as well as presses.

May we send
you our Bulletin
describing these
systems?



THE TOMKINS-JOHNSON CO.

628 N. Mechanic Street, Jackson, Michigan

A.S.M. Schedules 57 Papers for Forthcoming Cleveland Meeting

THE American Society for Metals has announced that 57 papers dealing with every important phase of metallurgical engineering will be presented during

the technical sessions of the eighteenth annual convention of the society, to be held in Cleveland, Oct. 19 to 23 inclusive, as a part of the National Metal Show.



Paper Presented at the
Twentieth Annual Meeting
of the
American Gear Manufacturers Association
by W. E. Sykes

In this informative paper the author explains the difference between *noise* and *sound*, states the causes of gear noise and analyzes the requirements of design, workmanship, lubrication and other factors that must be met to prevent or overcome noise.

The author has had over a quarter of a century of experience in the design, manufacture and operation of gearing and for a number of years has given much study to the subject discussed in the paper.

Demand for copies of this paper has required another printing. As long as this supply lasts we shall be glad to send a copy free to those who request it on their company letterhead.

FARREL-BIRMINGHAM COMPANY, INC.
333 Vulcan St., Buffalo, N. Y.

Papers will be presented each morning and afternoon of the convention, with the exception of Wednesday morning, when the society's annual meeting will be held and the 1936 Edward De Mille Campbell Memorial Lecture presented by J. P. Gill, chief metallurgist of the Vanadium Alloys Steel Co.

Outstanding features of this year's technical program are the lectures on physical testing of metals by H. D. Churchill, professor of mechanics at Case School of Applied Science, three lectures on X-ray usage by Kent R. VanHorn, metallurgist for the Aluminum Co. of America, and an extensive symposium dealing with the plastic working of metals.

A list of the papers to be presented follows:

Monday Morning, Oct. 19; Statler Hotel

"The Retarding Effect of Certain Metallic Elements on Graphitization," by H. A. Schwartz, H. H. Johnson and C. H. Junge; "Cadmium Alloys for Bearings," by C. F. Smart; "Diffusion of Hydrogen through Nickel and Iron," by W. R. Ham; and "High Speed Motion Picture Showing Behavior of Quenching Mediums During Quenching," by I. N. Zavarine.

Monday Afternoon; Public Auditorium

"Notes on Continuous Gas Carburizing," by R. J. Cowan; "Differential Hardening by Induction," by M. A. Tran and W. E. Benninghoff; "The Continuous Heat Treatment of Cold Rolled Strip," by N. P. Goss and T. B. Bechtel; and "Lecture on Physical Testing of Metals," by H. D. Churchill.

Public Auditorium—8.00 p. m.

Lecture on "X-Ray Analysis," by K. R. VanHorn.

Tuesday Morning, Oct. 20; Statler Hotel

"Some Effects of Small Additions of Vanadium to Eutectoid Steel," by J. G. Zimmerman; R. H. Aborn and E. C. Bain; "Influence of Aluminum on the Normality and Grain Size of Steel," by G. R. Brophy and E. R. Parker; and "A Study of the Effect of the Aluminum Addition on the Structure of a Quenched Carbon Steel," by H. W. McQuaid; "The Effect of Titanium on Some Cast Ferrous and Nonferrous Metals," by J. A. Duma; "Effect of Titanium on the Hardness and Microstructure of Heat Treated 18 Per Cent Chromium Steel Ingots," by R. E. Bannon; and the "Production of Flakes in Steel by Heating in Hydrogen," by R. E. Cramer.

Tuesday Afternoon; Public Auditorium

"Effect of Overload on the Fatigue Properties of Several Steels at Various Low Temperatures," by H. B. Wishart and S. W. Lyon; "Austenitic Stainless Alloys: Their Properties and Characteristics," by V. N. Krivobok and R. A. Lincoln; and "Slip Twinning and Cleavage in Iron and Silicon Ferrite," by C. S. Barrett, G. Ansel and R. F. Mehl.

Public Auditorium—4.30 p. m.

Lecture on "Physical Testing of Metals," by H. D. Churchill.

Public Auditorium—8.00 p. m.

Lecture on "X-Ray Analysis," by K. R. VanHorn.

Wednesday Morning, Oct. 21

Annual meeting and Campbell Memorial Lecture.

Wednesday Afternoon; Public Auditorium

"Magnetic Properties of a Series of Basic Open-Hearth Slag Samples," by B. A. Rogers and K. O. Stamm; "Basic Open-Hearth Slag Control," by Earnshaw Cook; "A New Tool for the Control of Quality Steel Making," by G. T. Motok; and "Equilibrium in the Reaction of Hydrogen with Iron Sulphide in Liquid Iron and the Thermodynamics of Desulfurization," by John Chipman and Ta Li.

Public Auditorium—4.30 p. m.

Lecture on "Physical Testing of Metals," by H. D. Churchill.

Public Auditorium—8.00 p. m.

Lecture on "X-Ray Analysis," by K. R. VanHorn.

Thursday and Friday Mornings, Oct. 22 and 23; Statler Hotel

Symposium on the plastic working of metals, which includes the following papers: "Laws and Fundamentals of Plastic Deformation," by A. V. deForest; "Metallic Single Crystals and Plastic Deformation," by S. L. Hoyt; "Creep Characteristics of Metals at Elevated Temperatures," by C. L. Clark and A. E. White; "Interpretation and Use of Creep Results," by J. J. Kanter; "Elastic Properties and Their Relationship Strain Hardening," by M. F. Sayre; "Effect of the Shape of the Test Piece Upon the Energy Needed to Deform Materials in the Single Blow Drop Test," by O. W. Ellis; "Hot Working, Cold Working and Recrystallization Structure of Metals," by N. P. Goss; "Factors Relating to the Production of Drop and Hammer Forgings," by Adam Steever; "Hot Press and Upset Forging," by J. H. Friedman; "Extrusion of Metals," by D. K. Crampton; "Cold Heading of Bolts, Rivets and Nails," by R. H. Smith; "The Ductility of Steel in Wire Drawing," by H. B. Pulsifer; "Cold Forming Processes—Drawing Rods and Bars," by J. E. Beck; "Cold Drawing Processes: Making of Tubing," by Horace Knerr; "Cold Rolling of Mild Steel Sheets and Strip," by Anson Hayes and R. S. Burns; "Some Factor Affecting the Plastic Deformation of Sheet and Strip Steel and Their Relation to the Deep Drawing Properties," by Joseph Winlock and R. W. E. Leiter; "Cold Working of Hollow Cylinders by Auto-Frettage," by N. E. Woldman; and "Damping Characteristics of Metals," by G. R. Brophy.

Thursday Morning, Oct. 22; Simultaneous Sessions

"X-Ray Study of Preferred Orientations in Pure Cold-Rolled Iron-Nickel Alloys," by D. McLachlan, Jr., and W. P. Davey; "Application of X-Ray Diffraction to the Study of Fatigue in Metals," by C. S. Barrett; and "X-Ray Diffraction Studies of Distortion in Metals," by G. L. Clark and M. M. Beckwith.

Thursday Afternoon; Simultaneous Sessions

"Further Study of a High Carbon High Chromium Tool Steel," by W. H. Wills; "Importance of Boundary Attack in the Etching of Steel Specimens," by B. L. McCarthy; and "Physical Properties of Axle Shafts," by H. B. Knowlton.

Public Auditorium—4.30 p. m.

Lecture on "Physical Testing of Metals," by H. D. Churchill.

Friday Morning, Oct. 23; Simultaneous Sessions

"Conversion of Elongation Data from One Form of Test Piece to Any Other," by E. J. Janitzky; "Behavior of Some Low Alloy Steels in the Single-Blow Drop Test," by O. W. Ellis; and "The Fracture of Carbon Steel at Elevated Temperatures," by A. E. White, C. L. Clark and R. L. Wilson.

Friday Afternoon; Simultaneous Sessions

"Investigation of Fatigue Strength of Axles, Press Fits, Surface Rolling, and Effect of Size," by T. V. Buckwalter and O. J. Horger; "Endurance of Gear Steels at 250 Deg. F.," by A. L. Boegehold; and "Recovery of Cold Worked Nickel at Elevated Temperatures," by Erich Fetz.

Public Auditorium—4.30 p. m.

Lecture on "Physical Testing of Metals," by H. D. Churchill.

New Britain Machine To Drop Subsidiary

The New Britain Machine Co., New Britain, Conn., has decided to liquidate its subsidiary company, the New Britain-Gridley Machine Co., through which a part of its manufacturing business has been conducted. This, it is announced, is done purely as an economy measure. The New Britain Machine Co. will continue the business that was done by New Britain-Gridley in the same manner and with the same personnel.



Please them all!

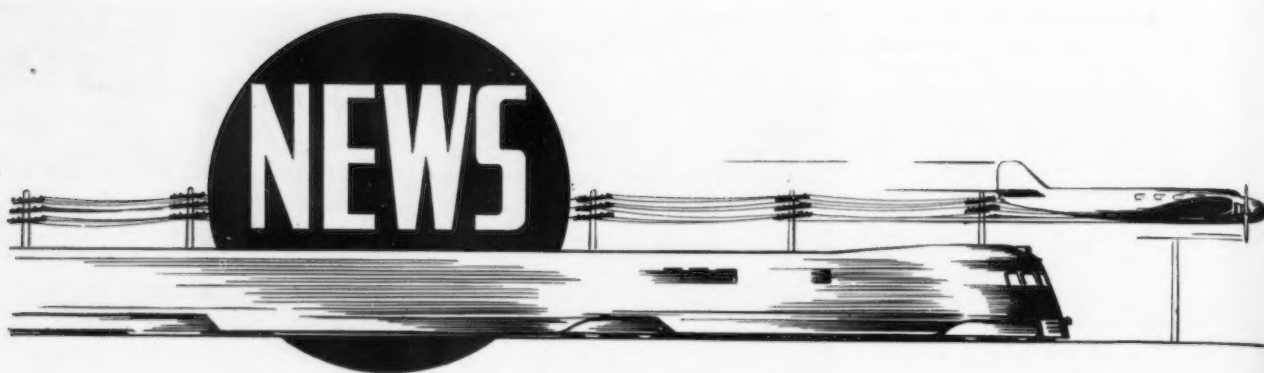
BUYING shop equipment tools is one case where it's easy to please everybody. It doesn't matter who they are — superintendents, foremen, inspectors, or machinists — they all share the same preference for Starrett Tools. They all know that Starrett stands for accuracy, dependability, convenience — everything you want in tools. Standardize on Starrett when you purchase shop equipment tools, dial indicators and hacksaws. Starrett Catalog No. 25 AA illustrates and describes more than 2500 Starrett Tools. The Special Dial Indicator Catalog shows the complete line of Starrett Dial Indicators. May we send copies?

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Manufacturers of Hacksaws Unexcelled
Steel Taps—Standard for Accuracy
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YOUR MEN Prefer STARRETT TOOLS

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East River Tunnel Soon Out for Bids

THE first contract for the construction of the Queens mid-town tunnel between Long Island City and East 38th Street, Manhattan, will be advertised for bids in the latter part of August or early September by the New York Tunnel Authority.

While it is too early to estimate the total amount of steel required for this undertaking, about 500 tons of structural shapes will be called for in the first contract. Planned to be approximately the same length as the Holland vehicular tunnel, which is 9250 ft. long and required 119,000 tons of cast iron for the tunnel lining, 27,000 tons of structural shapes, 2000 tons of reinforcing bars and 5000 tons of bolts, the East River tunnel will require correspondingly large tonnages for the approaches,

caisson shafts and the tunnel lining.

Construction will be begun about the middle of September and completion probably will require from three and a half to four years. Funds for the project are in great part being supplied by Federal agencies cooperating with the city of New York. A Manhattan cross-town tunnel and the tunnel now under construction from West 39th Street to New Jersey are expected, when linked with the new East River tunnel, to form an unbroken line of transit from Long Island to New Jersey without making it necessary to enter New York traffic.

Long Mfg. Co., Detroit; To Move Plant

THE Long Mfg. Co., division of Borg-Warner Corp., is preparing to vacate its manufacturing

quarters on East Grand Boulevard, Detroit, and is erecting an addition to its Dequindre Street plant, where manufacturing will be concentrated. At present all radiator operations and the central office are located at Grand Boulevard and clutch manufacture is carried on at the Dequindre Street plant. Approximately \$275,000 is to be expended for the new building, plus \$50,000 for equipment. The addition is L-shaped, the longest bay being 680 ft. long by 128 ft. wide. The building will provide 109,000 sq. ft. of additional floor space, bringing up total manufacturing space to 175,000 sq. ft. Estimated production in the new layout will be 2800 to 3000 radiators in an 8-hr. shift.

A physical testing laboratory is included, in which conditions simulating road tests can be set up. A garage, 70 x 107 ft., is also being erected to house road test cars and for storage and service on the company's trucks.

Aside from furnishing automo-

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TYPICAL INSTALLATIONS OF MODERN HARDINGE BENCH MACHINES AT LEADING MANUFACTURING ORGANIZATIONS

● *When considering similar machines—make certain that you have a Hardinge proposal* ●

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SPIRAL SPECIALISTS

GAMMONS HOLMAN CO. MANCHESTER, CONN.

tive radiators, the company also manufactures radiators for unit heaters and fin-type coils for similar usage. The move to the Dequindre Street site has been dictated both by the desire of having railroad siding facilities not now available and also to bring the plant up to date. New equipment, including presses and soldering fixtures, will be installed.

Westinghouse Gets Order for Gary Mill

ELECTRICAL equipment for the five-stand tandem cold reducing tin mill at the Carnegie-Illinois Steel Corp.'s Gary plant, which was mentioned in last week's issue, has been awarded to the Westing-

house Electric & Mfg. Co. As reported previously, Mesta Machine and United Engineering & Foundry Co. are furnishing the remainder of the equipment. This will be the second tandem type cold reduction unit to be installed at the Gary sheet and tin plate division of the Carnegie-Illinois Steel Corp. and approximate cost will be \$5,500,000. The entire project is part of a modernization program in the Gary plant, started in 1934.

W. A. Bonitz Heads Pressed Steel Car

WALTER A. BONITZ has been named president of the reorganized Pressed Steel Car Co., Pittsburgh now known as the Pressed Steel Car Co., Inc. In addition to Mr. Bonitz, five Pittsburghers are on the board of directors. Plans have been announced for an extensive program of expansion and improvements, including the early reopening of the company's old Allegheny plant as a center for repairs and storage of supplies and materials received through the concern's own private railroad and river terminal facilities.

The company's general offices will be moved to Pittsburgh from New York. Sales offices will be maintained in New York and Chicago. Lester N. Selig, Chicago, who has been elected chairman of the board, has stated that details of an expansion program will be made public shortly.

For the last three years Pressed Steel Car Co. has operated in receivership under Mr. Bonitz and George D. Wick as trustees. More than 2000 men are now employed in the concern's plant at McKees Rocks, Pa.

IN **THOUSANDS** OF SHOPS ON **OF TASKS**



A complete line of HERCULES Pneumatic and High Frequency Electric PORTABLE TOOLS.

THE BUCKEYE PORTABLE TOOL CO.
DAYTON, OHIO

HERCULES

Plastic Materials Companies Merge

TWO companies engaged in the manufacture of plastic materials, Unyte Corp., New York, and the Plaskon Co., Inc., Toledo, have been merged under the name of the Plaskon Co., Inc. The merged company will rank as a large producer of urea formaldehyde resins.

Officers of the combined company will be the same as those of the former Plaskon Co., namely, James L. Rodgers, Jr., president; Horton Spitzer and R. B. Harrison, vice-presidents; C. O. Marshall, secretary, and W. R. Feldt-

mann, treasurer. Directors will be: H. D. Bennett, president, Toledo Scale Co., Toledo; W. P. Pickhardt, former president of Unyte, and J. L. Rodgers, Jr. Head offices will be in Toledo.

The New York office of Unyte, formerly at 521 Fifth Avenue, will be transferred to 41 East Forty-second Street. For the present, Unyte will be manufactured and sold under its own name. Plaskon was developed by the research department of Toledo Scale Co. and its manufacture was started in 1930.

New Directors of A.F.A. Hold First Meeting

THE new board of directors of the American Foundrymen's Association, headed by the incoming president, James L. Wick, Jr., held its first regular meeting on July 22 and 23. The retiring president is D. M. Avey, editor of *The Foundry*.

It was decided to continue the work of the safety and hygiene section, which was organized in January, 1936, with E. O. Jones as director. Another decision was to raise funds by subscription among members to support the work of the foundry sand research committee in a study of the effect of elevated temperatures on molding sand. A recommendation was received that the association appropriate funds for preparation of a treatise on the designing of steel castings.

A new position, that of assistant technical secretary, was created. Norman F. Hindle, who has served the association the past two years, first in the preparation of the Cast Metals Handbook and then in editorial and technical work, was appointed to the position.

C. E. Hoyt, executive secretary-treasurer and manager of exhibits, reported that invitations, supported by local A. F. A. chapters, had been received from Chicago, Cleveland, Milwaukee and St. Louis, for the 1937 and 1938 conventions.

The personnel of the new board of directors is as follows:

President—James L. Wick, Jr., Falcon Bronze Co., Youngstown.

Vice-President—H. Bornstein, Deere & Co., Moline, Ill.

Directors—Terms Expiring 1937

E. O. Beardsley, Beardsley & Piper Co., Chicago.

E. W. Campion, Bonney-Floyd Co., Columbus, Ohio.

W. L. Seelbach, Forest City Foundries Co., Cleveland.

Frank J. Lanahan, Fort Pitt Malleable Iron Co., Pittsburgh.

Sam Tour, Lucius Pitkin, Inc., New York.

Directors—Terms Expiring 1938

W. J. Cluff, Frederic B. Stevens, Inc., Detroit.

C. E. Davis, Alloy Specialty Co., Coraopolis, Pa.

L. S. Peregoy, Sivyer Steel Casting Co., Milwaukee.

F. A. Sherman, Dominion Foundries & Steel, Ltd., Hamilton, Ont.

H. S. Washburn, Plainville Casting Co., Plainville, Conn.

Directors—Terms Expiring 1939

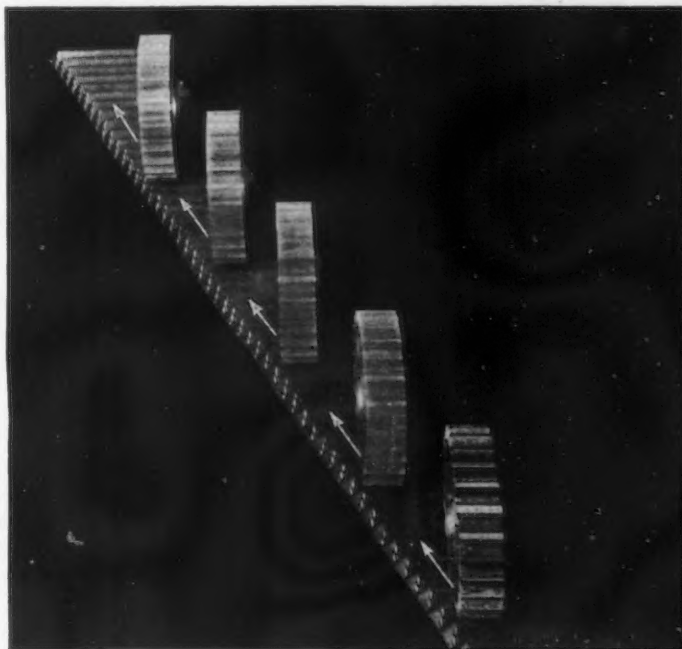
James R. Allan, International Harvester Co., Chicago.

D. M. Avey, The Foundry, Penton Bldg., Cleveland.

Carl C. Gibbs, National Malleable & Steel Castings Co., Cleveland.

Marshall Post, Birdsboro Steel Foundry & Machine Co., Birdsboro, Pa.

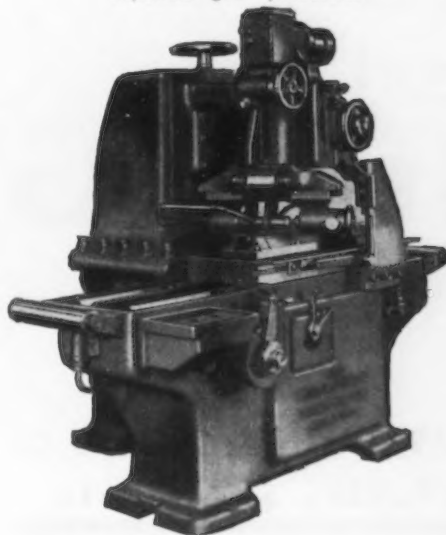
L. N. Shannon, Stockham Pipe Fittings Co., Birmingham.



All gear design starts from a basic rack. That is why Michigan crossed axes finishing—using a rack—consistently produces more accurate gears.

"31,615 GEARS per SHARPENING" Half-a-million or more per Rack

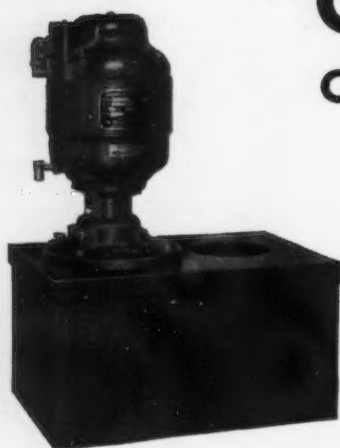
The Michigan Gear Finisher for helical or spur gears is now used by a majority of all important gear producers.



Minimum Tool Costs—the lowest for any finishing process—is repeatedly proven by the Michigan Gear Finisher through reports such as this one from a leading manufacturer. These two qualities—accuracy and lower gear costs—combined with flexibility, are important factors in the popularity of this machine among gear producers irrespective of production quantity.

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"GUSHER" COOLANT PUMPS

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Machine Tool Builders.

By giving *split second dependable flow*, Gusher Pumps are being adapted more and more as standard equipment on MODERN Machine Tools.

Modernize your Coolant equipment by specifying
"Gusher" Pumps.

THE RUTHMAN MACHINERY COMPANY
537 East Front St., Cincinnati, Ohio

Abrasive Industry Simplifies Products

WITHOUT changing the recommended sizes, which became effective Sept. 1, 1930, but clarifying the headings, the abrasive industry has approved a revision of Simplified Practice Recommendation R118, Abrasive Grain Sizes,

just announced by the Bureau of Standards. The revision becomes effective Sept. 1. The original recommendation established a table of allowable limits for the sizing of aluminum oxide and silicon carbide abrasives for polishing uses and for grinding wheel manufacture.

Until ready in printed form, complimentary copies of this sim-

★ Specialists in Alloy and Tool Steel TUBING

Our concentration on tubing enables us to give customers the benefit of our special skill and experience. Large stocks available for immediate shipment—Tool Steel Tubing, Ball Bearing Tubing, Stainless Tubing, Aircraft Tubing, Hypodermic Tubing, Cold Drawn Mechanical Tubing, A.S.M.E. Boiler Tubing.

May We Serve You?

THE BISSETT STEEL COMPANY, Cleveland, O.
The Tubing Specialists

plified practice recommendation, in mimeographed form, may be obtained from the Division of Simplified Practice, National Bureau of Standards, Washington.

Aluminum Co. Raises Wages 5 Per Cent

ALUMINUM CO. OF AMERICA, Pittsburgh, has announced a general wage increase of approximately 5 per cent, effective Sept. 15, 1936. Approximately 20,000 hourly employees, of whom 6500 work in the Pittsburgh district, will benefit from the increase.

This is the second wage raise within the past nine months, 5 per cent having been granted on Dec. 1, 1935. According to the company, hourly rates are now 11 per cent above those prevailing in 1929, and the increased cost to the company for the wage adjustment just announced, on an annual basis, is approximately \$1,500,000.

Crane Co. Stock Given To Employees

EXECUTORS of the estate of Richard T. Crane, Jr., president of Crane Co., who died in 1931, have completed distribution of \$3,080,700 in Crane Co. common stock to 5907 employees in Crane plants throughout the world. This distribution was made under the will of Mr. Crane, which provided payments to employees on the basis of 10 shares for the first 10 years of service and an additional share for each additional year up to 25. Mr. Crane was known for his philanthropic interest in those working for him and at various times during his lifetime distributed Crane Co. stock as Christmas presents to his employees.

Silicosis Booklet

INDUSTRIES which have to deal with silicosis and allied dust diseases may obtain authoritative information on the medico-legal aspects of this hazard by writing to Medical X-ray Division, Eastman Kodak Co., Rochester, N. Y., for a reprint of an article by Dr. M. Kummel, Newark, N. J., who is a lawyer as well as a physician. The medical, legal, humane, economic and legislative questions involved are discussed, including methods of early diagnosis of the disease and methods of medical and engineering prevention. No charge is made for the booklet.



..PERSONALS..

RUDOLPH FURRER, heretofore assistant to the vice-presidents of the National Tube Co., has been appointed industrial engineer of the manufacturing department of Allis-Chalmers Mfg. Co., Milwaukee. In 1907, he became identified with the former Scranton plant of that company and was transferred in 1911 to the West Allis works, where he



RUDOLPH FURRER

was engaged in drafting and engineering work. He joined the A. O. Smith Corp. as a mechanical engineer in 1918 and during the war was with the aviation division of the Navy. He later became supervisor of construction for the A. O. Smith Corp. and from 1927 to 1932 held the position of chief engineer and director of research.

GEORGE SUMMERFIELD, formerly chief inspector of the Hayward-Tyler Co., Luton, England, has been appointed chief inspector of the Hill Diesel Engine Co., Lansing, Mich. He was also identified at one time with the Novo Engine Co., Reo Motor Car Co., and the Olds Motor works division of General Motors Corp.

ELMER A. SCHNEIDER, formerly owner of the Mishawaka Pyrometer Instrument Co., Mishawaka, Ind., has been appointed production manager of the Wheelco Instruments Co., Chicago, and GEORGE W. KELLER, formerly vice-president, Brown Instrument Co., Philadelphia, has been appointed manager of Wheelco's eastern sales division.

JOSEPH JANECKE has been added to the service department of the Ferro Enamel Corp., Cleveland. He was formerly with one of the large refrigerator enameling plants.

J. C. WARNER, associate professor of theoretical chemistry and for the past 10 years a member of the faculty of the chemistry department at the Carnegie Institute of Technology, has been appointed associate professor of metallurgy. He

will develop a teaching and research program in physical chemistry as it applies to the meeting and refining of metals. Professor Warner is a graduate of Indiana University. He conducted a symposium on inhibitors at the annual meeting of the American Electrochemical Society this spring.

ROBERT N. CAMPBELL has been appointed assistant manager of

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*Spells complete
satisfaction in*

COLD DRAWN STEELS

When WYCKOFF is written into any specification for Cold Drawn Steel, it is a guarantee of 100 per cent satisfaction whether your problem involves machinability . . . finish . . . straightness . . . concentricity or any combination of these, desired qualities. Let us serve you.

WYCKOFF DRAWN STEEL COMPANY

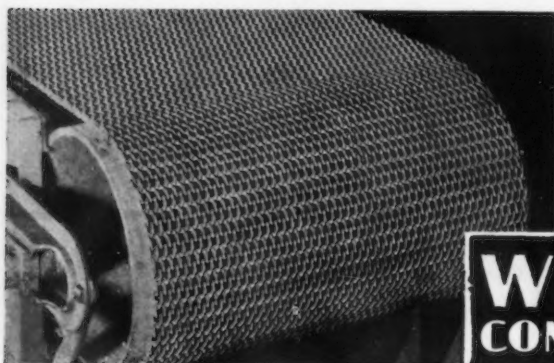
General Offices: First National Bank Bldg., Pittsburgh, Pa.
Mills at Ambridge, Pa. and Chicago, Ill.

Manufacturers of Carbon and Alloy Steels
Turned and Polished Shafting Turned and Ground Shafting

no chattering

The perfect articulation of Wissco Conveyor Belts is one of the many reasons for their long life. These belts are flexible . . . no fatigue of metal caused by flexing or wear from binding bearings. Of course you want to know more about Wissco Belts. Write today.

WICKWIRE SPENCER STEEL CO., 41 East 42nd St., New York
BUFFALO CHICAGO WORCESTER SAN FRANCISCO



Send for this
new Conveyor
Belt Hand
Book. It is
of value to
you.

WISSCO CONVEYOR BELTS

orders of the Jones & Laughlin Steel Corp. Mr. Campbell's entire business experience has been with Jones & Laughlin, he having started with them in 1893 at the Pittsburgh works. In 1913 he was transferred to the general office order department and advanced through various capacities to his present position.

WILLIAM MILLER, formerly assistant manager of sales of tin mill products for the Jones & Laughlin Steel Corp., has been appointed manager of sales of sheet and strip products in anticipation of completion of the company's new strip and sheet mill, now under construction. Mr. Miller has been with the Jones & Laughlin Steel Corp. for 22

years, having become associated with the company immediately after his graduation from Carnegie Institute of Technology. He served in various capacities in the Pitts-



WILLIAM MILLER

burgh office and the Philadelphia sales office, and as district manager at Atlanta, Ga., before going to Pittsburgh as assistant manager of sales of the tin mill products division.

♦ ♦ ♦

J. M. McKIBBIN has been appointed manager of a newly-created sales promotion department according to an announcement by N. G. Symonds, vice-president in charge of sales of the Westinghouse Electric & Mfg. Co., Pittsburgh. All apparatus sales promotion operations, excepting those of the company's merchandising department, will be coordinated under the new department's management and the activities of district office sales promotion managers will be directed by Mr. McKibbin. There will be no



Whitey Sez:

"Carving your name in the HALL OF FAME can now be superseded by chiseling your name into ill repute."

Arc-Welding Electrodes

for welding all corrosion and heat resisting products. Send for data book.

MAURATH INC

7300 UNION AVENUE • CLEVELAND



OHIO



J. M. McKIBBIN

change in the advertising department, now under the management of R. R. Davis.

Mr. McKibbin has been associated with the Westinghouse Electric & Mfg. Co. since 1920 and moves to his new position from the post of manager of industrial distribution, where his work involved sales promotion activities.

♦ ♦ ♦

C. R. ELLICOTT has been appointed general manager of the Cambria plant, Bethlehem Steel Co., Johnstown, Pa., succeeding the late L. R. Custer. Starting as a chemist in the laboratory of the Bethlehem, Pa., plant upon graduation from Lafayette College in 1908, Mr. Ellicott was later transferred to No. 1 open hearth, and in 1913 was appointed superintendent. In 1915 he was made superintendent of No. 1 and 3 open hearths. From 1917 to 1922 he was superintendent of the hot metal division, comprising blast furnaces, open hearths 1 and 2, tool steel and merchant bar mills. In 1922 he was appointed superintendent of furnaces and alloy mills of the Lehigh division of the Bethlehem, Pa.,



C. R. ELLICOTT



R. E. HOUGH

plant and in October, 1928, he was transferred to the Cambria plant as assistant general manager.

R. E. HOUGH has been appointed assistant general manager. He was formerly superintendent of the Gautier mills, going to the Cambria plant in 1929 after 22 years' service at the Lackawanna plant.

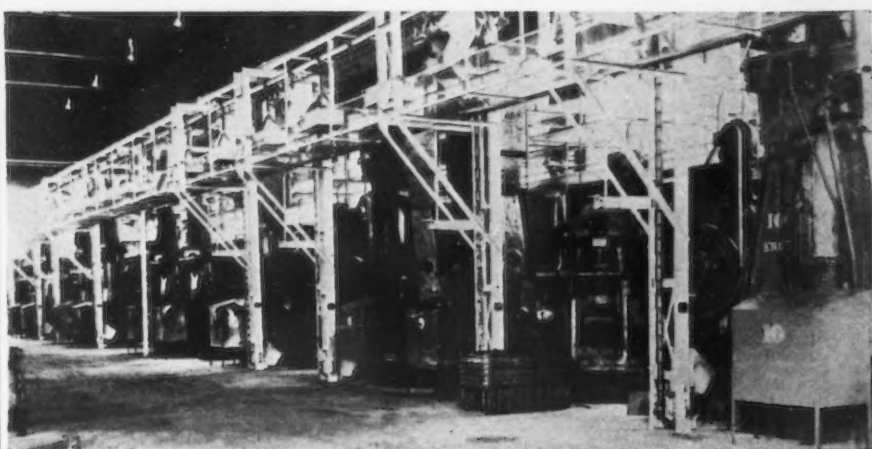
♦ ♦ ♦

GEORGE P. MACKNIGHT has returned to the Porcelain Enamel Institute, 612 North Michigan Av-

enue, Chicago, as secretary, to succeed KURT R. GROENER, who has resigned. Mr. MacKnight, who was associated with the institute from 1931 to 1934, has been engaged in other association activities and publicity work for the last two years.

♦ ♦ ♦

M. H. MAWHINNEY, consultant with the Salem Engineering Co., Salem, Ohio, has resigned. He was a partner in the company until January of this year.



Good to the Last Drop

Eleven drop hammers in this line (one does not show) and every last drop an ERIE. The trimming presses you see in the background are ERIES, too, and just as highly satisfactory as the hammers. There are a total of twenty-six ERIE hammers and presses in this one plant of a prominent manufacturer—a recent installation of which we are justly proud.

ERIE FOUNDRY COMPANY, ERIE, PENNA., U. S. A.

DETROIT:
CHICAGO:

335 CURTIS BUILDING
549 WASHINGTON BLVD.

INDIANAPOLIS: 335 POSTAL STATION BUILDING
PARIS, FRANCE: 8 RUE DE ROCROY



Finished Steel Exports Up 5½ Per Cent—Imports Down

Exports (In Gross Tons)	June		Six Months Ended June	
	1936	1935	1936	1935
Pig iron	91	417	924	1,421
Ferromanganese and spiegeleisen	16	1	226	35
Other ferroalloys ⁶	75	...	1,041	...
Iron and steel scrap	186,696	211,744	1,050,273	1,118,676
Tin plate scrap .....	...	2,973	8,825	19,167
Waste-waste tin plate	4,477	2,584	17,837	12,644
Pig iron, ferroalloys and scrap	191,355	217,719	1,079,126	1,151,943
Ingots, blooms, billets, sheet bars	1,682	1,778	6,883	28,280
Skelp	6,017	530	18,362	6,766
Wire rods	3,317	2,368	20,931	11,162
Semi-finished steel	11,016	4,676	46,176	46,208
Bars, concrete reinforcement ²	188	...	1,341	...
Bars, other steel	3,128	3,793	24,436	27,097
Iron bars	107	53	656	614
Plates, iron and steel	4,853	2,971	31,611	19,170
Sheets, galvanized steel	4,654	6,391	28,420	37,872
Sheets, galvanized iron	111	99	682	723
Sheets, black steel	10,771	9,711	65,787	53,370
Sheets, black iron	798	382	3,895	2,934
Hoops, bands, strip steel	6,002	3,173	29,385	21,332
Tin plate and taggers' tin	26,596	7,160	131,708	54,112
Terne plate (including long terne)	631	161	2,100	1,357
Structural shapes, plain material	6,057	2,520	25,573	14,915
Structural material, fabricated	1,410	2,700	9,703	12,538
Sheet piling	263	...	1,540	...
Tanks, steel	1,669	442	12,768	2,980
Steel rails	8,110	6,608	34,057	19,172
Rail fastenings, switches, spikes, etc.	1,209	1,011	5,741	4,797
Boiler tubes	380	328	2,948	4,779
Casing and oil line pipe	2,242	1,516	10,919	16,663
Pipe, black and galvanized, welded steel ..	1,280	2,015	9,326	19,262
Pipe, black and galvanized, welded iron ..	388	219	1,740	1,847
Plain wire	4,069	4,364	22,628	18,676
Barbed wire and woven wire fencing	2,187	2,712	15,945	15,578
Wire cloth and screening	94	119	506	514
Wire rope	231	414	1,684	2,208
Wire nails	448	644	4,002	4,871
Other nails and tacks	235	250	1,636	1,782
Other wire and manufactures	399	335	2,354	2,461
Bolts, nuts, rivets and washers, except track ..	493	430	3,124	3,270
Other finished steel	284	122	1,101	705
Rolled and finished steel	89,287	60,643	487,314	365,599
Cast iron pipe and fittings	1,154	1,229	6,890	7,389
Malleable iron screwed fittings	310	245	1,634	1,590
Car wheels and axles	558	495	2,886	11,405
Iron castings	723	685	3,797	4,391
Steel castings	308	152	1,449	1,257
Forgings	240	489	2,319	2,905
Castings and forgings	3,293	3,295	18,975	28,937
Total	294,951	286,333	1,631,591	1,592,687

Imports (In Gross Tons)	June		Six Months Ended June	
	1936	1935	1936	1935
Pig iron	16,793	6,583	97,507	53,486
Sponge iron .....	...	204	1,128	666
Ferromanganese ¹	2,222	4,153	12,017	22,528
Spiegeleisen	5,285	...	17,374	...
Ferrochrome ²	2	...	3	1
Ferrosilicon ³	22	52	397	429
Other ferroalloys ⁴	150	...	151	1
Scrap	19,587	2,417	66,099	12,056
Pig iron, ferroalloys and scrap	44,061	13,409	194,676	89,167
Steel ingots, blooms, etc. ....	...	28	61	1,032
Billets, whether solid or hollow ⁵	79	...	389	...
Wire rods	1,278	722	9,770	7,174
Semi-finished steel	1,357	750	10,220	8,206
Concrete reinforcement bars	501	300	1,709	808
Hollow steel bars	162	66	1,008	471
Merchant steel bars	2,111	1,511	18,642	10,938
Iron slabs .....	...	...	...	...
Iron bars	168	317	658	634
Boiler and other plate .....	...	94	52	167
Sheets, skelp and saw plate	1,420	1,286	10,537	3,982
Die blocks or blanks, etc. ⁵	2	...	91	...
Tin plate	8	1	135	101
Structural shapes	3,157	4,394	25,427	17,481
Sheet piling	182	...	1,046	...
Rails and track material	573	185	3,546	1,644
Welded pipe	531	361	2,757	915
Other pipe	1,526	3,174	8,689	8,116
Hoops and bands for baling .....	...	...	88	1,743
Other hoops and bands	979	2,517	10,916	11,074
Barbed wire	557	2,344	9,219	13,356
Round iron and steel wire	420	488	2,336	2,184
Telegraph and telephone wire	1	4	32	17
Flat wire and steel strips	274	97	1,478	803
Wire rope and strand	183	123	1,229	920
Other wire	64	40	703	437
Nails, tacks and staples	1,479	1,542	12,803	8,492
Bolts, nuts and rivets	16	56	235	198
Horse and mule shoes	44	28	211	346
Rolled and finished steel	14,858	18,928	113,548	81,827
Malleable iron pipe fittings .....	...	...	20	46
Cast iron pipe and fittings	17	27	126	27
Castings and forgings	117	94	555	590
Total	59,910	33,208	319,145	182,863

¹ Manganese Content. ² Chrome Content. ³ Silicon Content. ⁴ Alloy Content. ⁵ New classes. No comparable figures for previous year.

ALTHOUGH total exports of iron and steel declined from 314,950 tons in May to 294,951 in June, exports of rolled and finished steel showed a gain of 5½ per cent, or from 84,593 tons to 89,287 tons. A sharp decline in scrap of 26,670 tons accounted for the loss in total iron and steel exports, scrap exports in June amounting to 186,696 tons compared with 213,366 tons in May. The increase in the rolled and steel classification was accounted for by greater rail and plain structural shape exports.

The value of the iron and steel export trade in June increased to \$10,147,811 from \$10,099,360 in May. In the first six months the value of exports rose 25.2 per cent over the corresponding period last year, or from \$43,532,686 to \$54,491,431.

Overseas shippers supplied the United States with 40,323 tons of iron and steel products (excluding scrap), valued at \$1,657,194 during June, thereby recording declines of 7.5 per cent in quantity and 0.2 per cent in value when compared with May receipts.

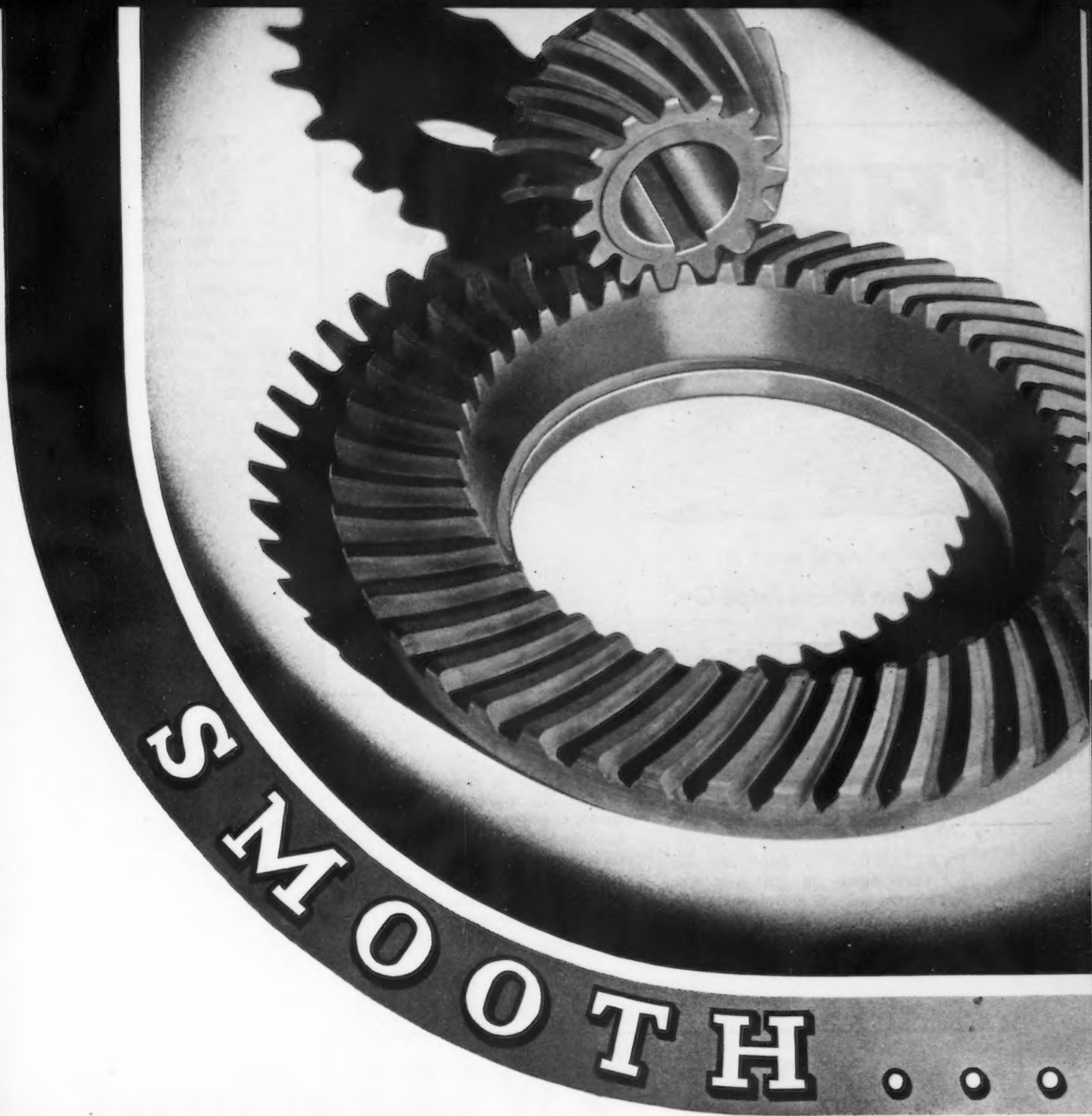
The iron and steel import trade during the first half of the current year reached an aggregate of 253,046 tons, valued at \$10,063,609 (excluding scrap), compared with 170,807 tons, valued at \$7,517,268 in the first half of 1935.

June Imports of Iron and Manganese Ores

	Iron Ore		Manganese Concentrates, 35 Per Cent or Over	
	1936	1935	1936	1935
Canada	22,000	22,000	168	...
Cuba	132,480	88,300	...	...
Chile .....	...	10	...	...
Spain	15,274	7,060	...	...
Norway .....	...	...	...	...
Sweden .....	...	...	...	...
French Africa .....	...	...	...	...
Russia .....	...	9,000	18,528	9,176
India .....	...	...	3,492	701
Brazil .....	...	...	...	...
West Africa .....	...	...	6,994	1,311
Other Countries	271	47,198	19	47
Total	170,025	157,568	29,201	11,235

June Imports of Pig Iron by Countries of Origin

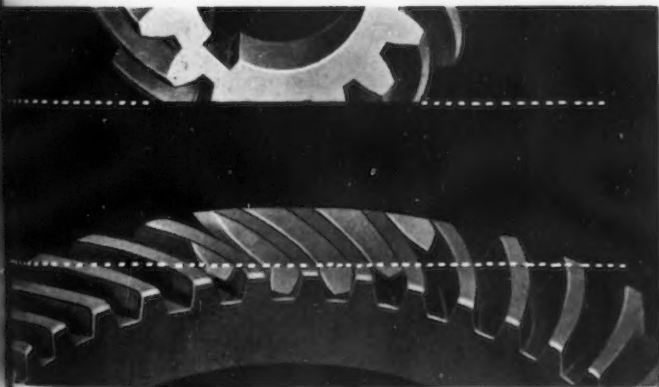
	June		Six Months Ended June	
	1936	1935	1936	1935
United Kingdom	2,554	1,050	3,736	11,351
British India	6,829	2,952	29,147	11,495
Germany	308	100	3,669	100
Netherlands	4,798	1,364	39,789	18,765
Canada	694	368	5,798	5,589
France .....	...	...	...	50
Belgium .....	...	...	529	100
Norway	340	152	1,598	1,762
Sweden	210	107	374	447
Russia	851	490	12,458	2,973
All Others	209	...	409	854
Total	16,793	6,583	97,507	53,486



● Smooth . . . best describes the flow of power through spiral bevel gears. The gradually engaging teeth provide an even distribution of power . . . particularly desirable at high speeds.

• • •

Cut-away showing larger number of teeth in mesh and continuous pitch line contact.



GLEASON

GLEASON WORKS • ROCHESTER, N. Y.

"HERCULES" RED-STRAND WIRE ROPE

REG. U. S. PAT. OFF.

Furnished in Flattened Strand, Round Strand, Preformed, Steel Clad and Non-Rotating constructions.

A GIANT
in Strength and
Endurance



MADE ONLY BY

A. Leschen & Sons Rope Co.

ESTABLISHED 1857

5909 KENNERLY AVENUE
ST. LOUIS, MO.

NEW YORK

CHICAGO

DENVER

SAN FRANCISCO

Defends Use of Salt Spray Test

DETECTION of improper surface finish on stainless steel bars intended to stand up under outdoor exposure is credited to the salt spray test by metallurgists of

the Bureau of Standards, Washington. In making this announcement, the bureau pointed out that the so-called salt spray test is widely used for stainless steel, yet it is severely criticized as a basis for predicting the behavior of these alloys under general service conditions. Some of the criticism,

the bureau stated, is probably justified, but nevertheless the test may be very useful for showing whether the surface of the material has been finished in such a way as to insure the maximum corrosion resistance of which it is capable.

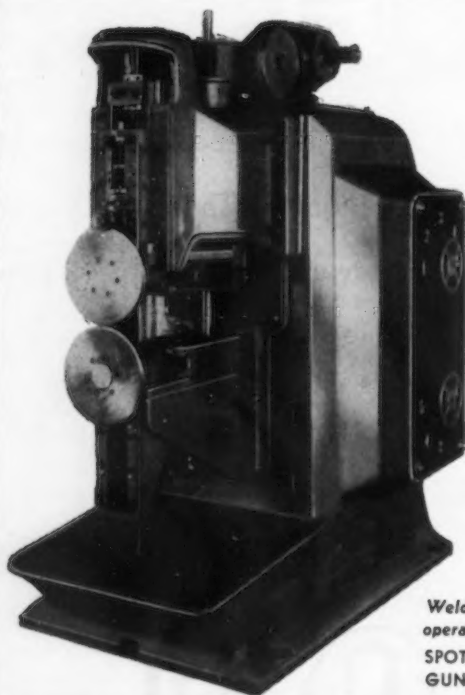
Recently several bars of cold-rolled chromium-iron alloy (13 per cent chromium), with surfaces ground smooth and bright, were exposed in a 20 per cent sodium chloride mist for 24 hr. Numerous rust spots originating at isolated places over the surfaces of the bars resulted. However, it was stated, after a refinishing of the bars, during which a layer of approximately 1/100 in. thickness was removed from all surfaces, no pitting or rusting whatsoever was observed when the bars were tested in the same manner. The bureau added that, as this material was intended for outdoor exposure at an inland location, it was evident that the resistance to corrosion inherent in the material would not have been obtained with the original surface finish.

New Copper Alloy

A NEW copper alloy is being marketed under the name of Hackett K-Copper by its producer, the Hackett Brass Foundry, Detroit.

Hackett K-Copper is claimed to combine the physical properties of steel and bronze with the high electrical and heat conductivity of copper. Compared with pure copper it has equal corrosion resistance, the same coefficient of expansion, coefficient of resistivity and modulus of elasticity. It has a hardness of 70 to 80 Rockwell B (125 to 150 Brinell), ultimate strength of 70,000 lb. per sq. in., elongation approximately 20 per cent, reduction in area 50 per cent; in drawn rod 83 per cent the electrical conductivity of pure drawn copper, in forged form 75 to 85 per cent that of forged copper.

The alloy is available in bars, forgings and castings and is being widely used for welding tips and holders. The producer uses it in the manufacture of a wide range of standard and special designs of spot welding tips which have demonstrated savings for operations of welding machines. The Hackett K-Copper tips are reported to mushroom less easily than pure copper, require dressing less frequently and deliver a greater number of welds per tip.



SWIFT SEAM WELDER

with direct motor driven free running rolls operating on self-contained preloaded cartridge type roller bearings.

Swift Electric Welder Co.

6560 EPWORTH BLVD.
DETROIT, MICH.

Welding machines which are hand, hydraulic or air operated including the following types:

SPOT, SEAM, PROJECTION FLASH, FLUE AND GUN WELDING UNITS.

...OBITUARY...

IRVIN FRANK LEHMAN, president and one of the founders of the Blaw-Knox Co., died recently at Lake Amston, Conn. Mr. Lehman, a leader in industrial, civic and



I. F. LEHMAN

charitable affairs, founded the company with his brother, Albert Carl Lehman, whom he succeeded as president upon the brother's death two years ago. The company was a coalition of the Knox Pressed and Welded Steel Co. and the Blaw Steel Construction Co., both of which were owned by the two brothers and combined in 1917.

Mr. Lehman was also vice-president and director of the Hoboken Land Co., Blaw-Knox Construction Co., National Alloy Steel Co., Lewis Foundry & Machine Co., Union Steel Castings Co., Pittsburgh Rolls Corp., and Blaw-Knox International Corp. Mr. Lehman was born in Pittsburgh 65 years ago.



JOHN CAMPBELL, 63, founder and president of the Campbell Foundry Co., Harrison, N. J., died of a heart ailment at his home in South Orange Monday, Aug. 10. Born in Glasgow, Scotland, Mr. Campbell came to this country when he was 15 years old and attended Coleman's Business College in Newark and the Newark Technical School. In 1892 he entered the employ of the Maher & Flockhart Co., Newark iron founders. This firm later became the Flockhart Foundry Co.

DO YOU KNOW

IF large savings can be made in your lubrication costs?

HOW OFTEN such savings are overlooked? Not because of negligence, either, but usually because a small saving never seems important until a lot of them accumulate, day by day, into really worthwhile amounts.

THAT Standard Oil (Ind.) products and Standard Oil service are helping thousands of plants and shops "cash in" on these accumulated savings through *Correct Lubrication*?

HOW to get a lubrication survey of your plant at no cost—forestall repairs and breakdowns—reduce lubrication costs?

The answer to the last question is this:
Simply phone your local Standard Oil office—ask for a Standard Oil engineer. (There is, of course, no obligation.)



Write for "The Lubrication Engineer—His Value to You"—know how these men work, and how you can profit by their free service.
Address: STANDARD OIL COMPANY (Indiana) (389)
910 South Michigan Avenue, Chicago, Illinois (390)

Name

Address

City State

Copr. 1936, Standard Oil Co.

STANDARD OIL COMPANY
(Indiana)

CORRECT LUBRICATION

and Mr. Campbell resigned as secretary in 1921 to organize his own company. Mr. Campbell was active in church work in Newark.

♦ ♦ ♦

JOHN R. SAMPSON, veteran agent of the joint Chicago & North Western and Soo Line Railroad ore docks at Ashland, Wis., died on Aug. 3 after a brief illness. He was born in Negaunee, Mich., on April 5, 1874, and entered the North

Western service in 1892, becoming dock superintendent at Ashland in 1906.

♦ ♦ ♦

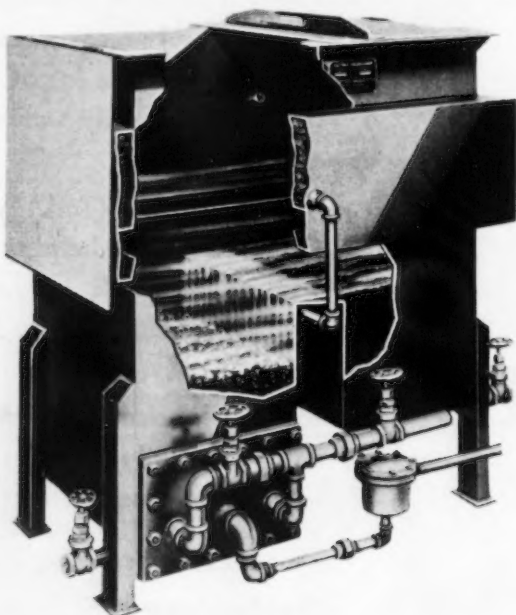
HUBBARD D. NITCHIE, SR., who was, except for a few years, continuously employed in the engineering and sales department of the Watson-Stillman Co., Roselle, N. J., since his graduation from Cornell University in 1897, died suddenly at his home in Cranford, N. J., on Aug. 2.

J. C. WHITRIDGE, president of the Buckeye Steel Castings Co., Columbus, died in that city on July 29, aged 64 years. He was graduated in mechanical engineering from



J. C. WHITRIDGE

A NEW *Compact* ★ DETREX DEGREASER



● Occupying only 8 1/4 square feet of floor space, this new Detrex* Degreaser (Model 2 D600SP, Size 624) will degrease 1000 lbs. of metal per hour.

By manual handling or the use of a simple hoist, the work is immersed, first in the boiling solvent, then in the distillate rinse and finally held in the pure solvent vapor. It comes out absolutely greaseless and dry.

By the continuous distillation process within the machine, the Perm-A-Clor solvent in the rinse chamber is continuously renewed.

Water jacket condenser and solvent trough completely encircle the machine. Outlet from trough simplifies cleaning machine.

Unit shown is steam heated but may be had with gas or electric heat.

This is one of the complete line of Detrex Degreasers built for every sort of degreasing operation, and in any size.

Write for recommendations on your Degreasing operations.

*Reg. U. S. Pat. Off.

DETROIT REX PRODUCTS CO.
13005 Hillview Ave., Detroit, Mich.

Purdue University in 1895 and after spending a few years with a consulting engineering firm in Chicago and on the engineering and editorial staff of the *Railway Gazette*, he joined the Buckeye company as assistant general manager. He was made vice-president of the company in 1920 and president and general manager in 1927.

♦ ♦ ♦

EDWARD L. KENNEY, since 1922 manager of the branch office of the Century Electric Co. in Rochester, N. Y., died July 25, aged 41 years. He was born in Elkhorn, Wis., and after being graduated from the electrical engineering course at the University of Wisconsin, entered the Cleveland office of Cutler-Hammer, Inc., Milwaukee, in 1917. Two years later he joined the Century company.

Features and applications of the universal tool milling machine built by Friedr. Deckel, Munich, Germany, and marketed in the United States by the H. P. Preis Engraving Machine Co., 157 Summit Street, Newark, N. J., are described and illustrated in a recently issued 54-page brochure. Illustrations comprise 98 large photo prints and 15 line sketches. Application of the machine as a punch miller and in the construction of molds, gages and jigs accounts for the largest illustrated sections.

10

REASONS WHY

Monarch Cam Lock Spindle Nose is Better!

1. Made of nickel alloy steel, electric furnace hardened.
2. Perfectly centralizes, and squares, chuck, plate or fixture.
3. Provides a minimum of overhang.
4. Faster in removing and attaching chucks and plates than any other type of spindle nose.
5. Chucks fit directly on spindle without adaptor plates.
6. No loose parts.
7. Spindle nose is of same dimensions as that used on many makes of turret lathes . . . making for standardization and interchangeability.
8. Provides the most rigid known means of holding chucks and plates to spindle.
9. Chucks, plates or fixtures cannot possibly come loose, even under the most severe service conditions.
10. Costs more to make than other types of spindles, but well worth it in use.

Fig. A

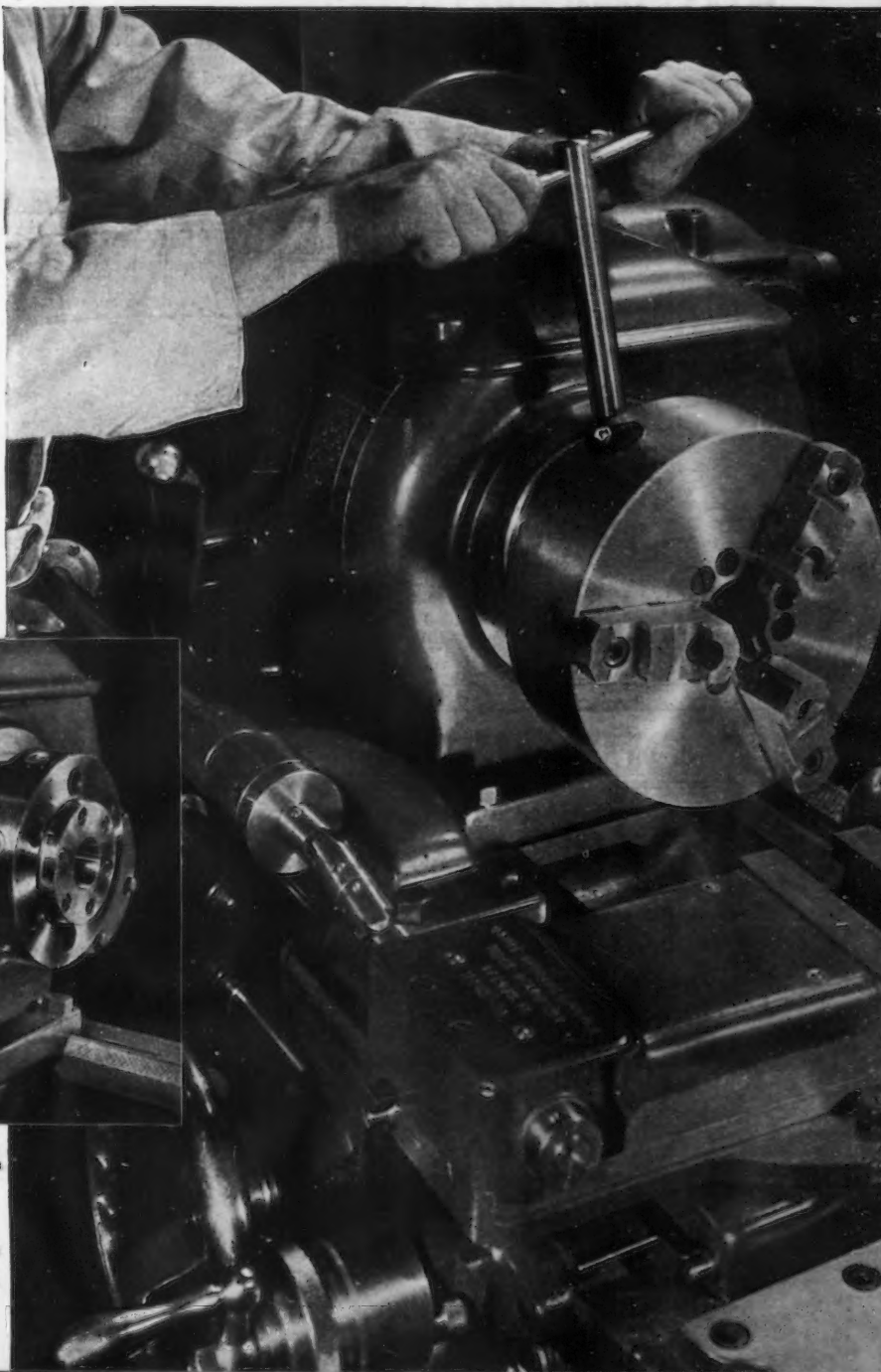


Fig. A—The cam studs in the chucks, plates and fixture serve both as drivers . . . and to hold these parts in place while the operator securely clamps them in position on the flange nose. He does this, in just a few seconds time, by making a quarter turn of the square end T-wrench.

Fig. B—The spindle nose shown is the size used on all Monarch Lathes from 12" to 18", inclusive, so that all chucks, plates and fixtures will readily interchange on all these sizes of machines. The flange nose is 7 1/8" in diameter. All dimensions of this spindle nose are the same as those that have been adopted for use on certain sizes of turret lathes as well as some of the automatic lathes. This makes for great interchangeability of chucks and special fixtures.

Fig. B



THE MONARCH MACHINE TOOL CO.
SIDNEY, OHIO, U.S.A.

New York Sales Office: 611 Graybar Building
Monarch lathes
Chicago Sales Office: 622 W. Washington Blvd.
Helical Gears - Timken Bearings
SMOOTHER... QUIETER... MORE POWERFUL

Monarch Covers the Turning Field

WELDIT Gasaver

AUTOMATICALLY SHUTS OFF FLAME BETWEEN WELDS

... *Saving* 25 to 30%
in Gas and Oxygen



Torch Ignited. Flame Shut Off.

America's largest production plants use Weldit Gasavers. Cuts cost, eliminates idle torch flame hazards, increases production. Price \$10.00. Two weeks trial. Send for circular.

WELDIT ACETYLENE CO. 641 BAGLEY AVE.
DETROIT, MICH.

TEST THIS
WELDIT GASAVER
FREE FOR TWO WEEKS
IN YOUR PLANT



REINFORCING STEEL

... Awards of 17,659 tons
—24,140 tons in new
projects.

AWARDS

Arlington, Mass., 125 tons, reservoir, to Concrete Steel Co.

Buffalo, 200 tons, Best Street stadium, to Igoe Brothers, Newark.

Buffalo, 800 tons; disposal plant sewers, to Ernst Iron Works, Buffalo.

Lawrenceburg, Ind., 800 tons, whiskey warehouses, Joseph E. Seagram & Sons, Inc., to Pollak Steel Co., Cincinnati.

Chicago, 2300 tons, flow control at mouth of Chicago River, to Carnegie-Illinois Steel Corp.

Berwyn, Ill., 700 tons, sewer to Concrete Engineering Co.

Lake County, Ill., 150 tons, bridge to Calumet Steel Co.

St. Louis, 500 tons, Kings Highway viaduct over Missouri Pacific Railway, to Laclede Steel Co.

Denver, 603 tons, material for Bureau of Reclamation under four schedules, to Bethlehem Steel Corp.

Clear Lake County, Colo., 100 tons, three State bridges, to various bidders.

Cowan Park, Wash., 245 tons, State bridge, to Northwest Steel Rolling Mills.

Los Angeles, 250 tons, building at Emerson Junior high school, to Soule Steel Co.

Los Angeles, 154 tons, auditorium and classroom building at Arlington Heights school, to Blue Diamond Corp.

Los Angeles, 3570 tons, steel cylinder reinforcement, Colorado River aqueduct, to United Concrete Pipe Corp.

Los Angeles, 3515 tons, upper feeder of Colorado River aqueduct, to United Concrete Pipe Corp.

Los Angeles, 125 tons, auditorium at Manual Arts high school, to Blue Diamond Corp.

Oakland, Cal., 440 tons, Illinois-Pacific Glass Co. plant, to Soule Steel Co.

Stockton, Cal., 100 tons, sewage disposal plant, to Kyle & Co.

Aquatic Park, Cal., 142 tons, material for Treasury Department, to San Jose Steel Co.

San Francisco, 200 tons additional, foundations on State livestock building, to Bethlehem Steel Corp.

San Francisco, 800 tons of reinforcing bars and 1800 tons reinforcing trusses, paving on Golden Gate bridge, to Bethlehem Steel Corp.

San Francisco, 500 tons, two hanger buildings on Yerba Buena Shoals, to Soule Steel Co.

Sacramento, Cal., 140 tons, Thompson-Diggs warehouse, to Palm Iron Works.

San Pedro, Cal., 1200 tons, Federal jail, general contract to Robert E. McKee.

NEW REINFORCING BAR PROJECTS

Buffalo, 220 tons, clearwater basin for disposal plant, Igoe Brothers, Newark, low bidder.

Brooklyn, 3000 tons, housing project in Williamsburg, Starrett Brothers & Ekin, Inc., low bidder.

West Point, N. Y., 500 tons, two armory buildings at military academy, bids to be opened Aug. 26.

New York, 350 tons, Sixth Avenue subway, section 9, J. F. Cogan Co., low bidder.

New York, 340 tons, section 8, bids to be opened Sept. 11.

New York, 350 tons, Triborough bridge contract, Corbetta Construction Co., low bidder.

Chicago, preliminary estimate 400 tons, apartment building.

State of Illinois, tonnage being estimated, paving and bridges. Bids to be in Aug. 19.

Cook County, Ill., tonnage being estimated, bridges and paving, bids to be taken Aug. 19.

Waterloo, Iowa, tonnage being estimated, addition to Rath Packing Co. plant.

State of Cal., 157 tons, State paving and bridges in two counties, bids Aug. 27.

San Francisco, 20,000 tons, second unit Crystal Springs 60-in. pipe line, bids within 30 days.

Oakland, Cal., 107 tons, Fisher Body Co. factory building, bids opened.

Ukiah, Cal., 222 tons, Mendocino State hospital, bids opened.

Newport Beach, Cal., 190 tons, City seawall, bids expected within 30 days.

Los Angeles, 359 tons, channel cover and walls on Venice Boulevard, bids Aug. 18.

Santa Ana, Cal., 145 tons, bridge across Santa Ana River, bids Aug. 27.

Los Angeles County, Cal., 550 tons, bridge over Los Angeles River north of Long Beach, bids Aug. 27.

Los Angeles, 100 tons, arts and science buildings at Lindbergh Junior high school, bids opened.

Los Angeles, 150 tons, auditorium and classroom building at Bucannon Street School, bids opened.

YOUR DIE-SET BUSHINGS

CENTRIFUGALLY CAST IN AMPCO METAL

Are now carried in Milwaukee and Detroit stocks for immediate shipment.

Guide pin bushings in Ampco Metal have all of the advantages of hardened steel, with none of its disadvantages. Being bronze, they do not rust nor do they gall when running against steel pins. Because of the presence and effect of the Ampco Phase they actually outwear not only other bronzes, but steel, as well. Ampco die set bushings are centrifugally cast, affording thereby a cleaner, denser, longer-wearing metal than is obtained by sand casting. Supplied rough finished, they are easily machined and require no heat treatment and are decidedly superior to ordinary steel bushings.

Write for Data Sheet No. 29, giving sizes and additional data.

AMPCO METAL, INC.
MILWAUKEE, WISCONSIN

U. S. Steel Shipments Higher in July

SHIPMENTS of finished steel products by the United States Steel Corp. amounted to 950,851 tons in July, a gain of 64,786 tons over June. The July volume was exceeded by both April and May deliveries this year, but prior to that in no month was there a better showing since June, 1934. Compared with July, 1935, when 547,794 tons was shipped, last month's figure represented a gain of nearly 74 per cent. It was the best July the corporation has experienced since records, commencing with 1930, have been kept of finished steel shipments.

Based on the July tonnage, the corporation's finished steel making facilities were engaged at 61.3 per cent of capacity during the month. This compares with a rate of 57.1 a month ago and 34.0 in the corresponding period last year.

The Association of American Steel Manufacturers Technical Committees 616 Investment Building, Pittsburgh, has just published a revised edition of the booklet listing standard permissible variations in gage weight, gage thickness, size, flatness and camber of sheets. It includes standard classification by size of flat-rolled carbon products, bars, plates, hot-rolled strip, hot-rolled and hot-rolled annealed sheets, cold-rolled strip and cold-rolled sheets.

Forger at Work in New England

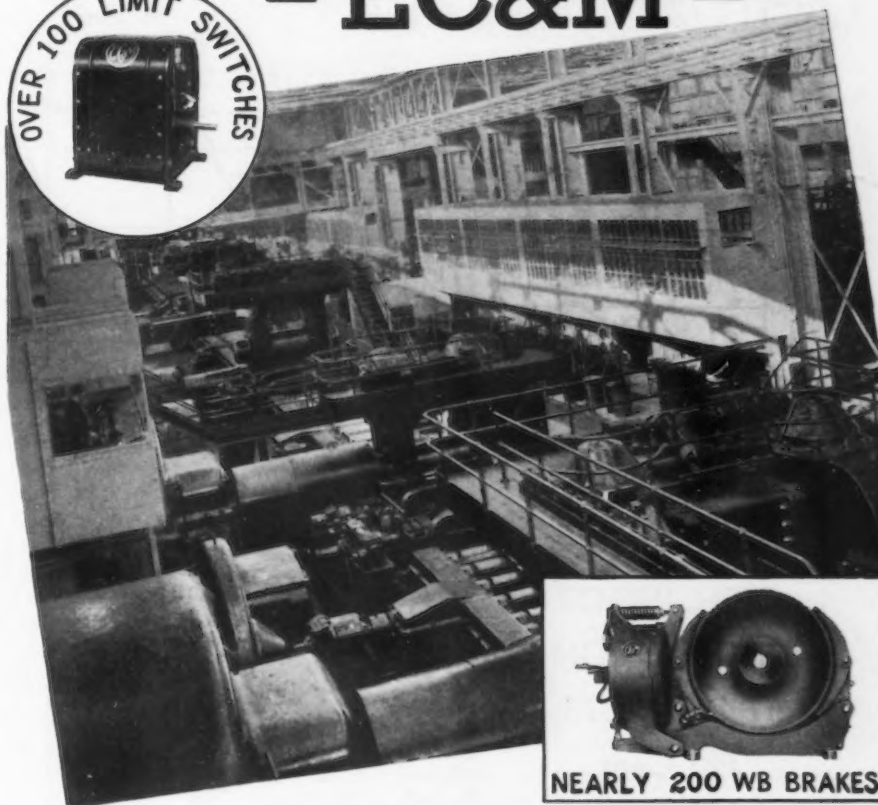
H. T. HALLOWELL, president of the Standard Pressed Steel Co. of Jenkintown, Pa., asks that readers of THE IRON AGE be informed concerning the operations of a forger who is traveling over the country and operating chiefly in the hardware field.

Mr. Hallowell writes as follows: "This person has an exact duplicate of our check. He fills in fictitious names for the president and treasurer of our company. He claims to be our salesman opening up a branch in this or that section, and he is having checks cashed at a rapid rate ranging all the way from \$250 down. His most recent operations have been in New Haven.

MONTHLY SHIPMENTS OF STEEL PRODUCTS BY UNITED STATES STEEL CORP.

Month	1933		1934		1935		1936	
	Ship-ments	Per Cent of Ca-pacity	Ship-ments	Per Cent of Ca-pacity	Ship-ments	Per Cent of Ca-pacity	Ship-ments	Per Cent of Ca-pacity
January	285,137	17.7	331,777	19.8	534,055	31.9	721,414	44.8
February	275,929	18.5	385,500	25.9	583,137	39.2	676,315	45.3
March	256,793	15.3	588,209	35.2	668,056	41.5	783,552	50.5
April	335,321	21.6	643,009	41.5	591,728	36.7	979,907	63.2
May	455,302	27.1	745,063	44.5	598,915	35.8	984,097	63.4
June	603,937	37.4	985,337	61.2	578,108	36.7	886,065	57.1
July	701,322	45.1	369,938	23.9	547,794	34.0	950,851	61.3
August	668,155	39.8	378,023	22.6	624,497	37.3	.....	.....
September	575,161	35.6	370,306	23.9	614,933	39.7	.....	.....
October	572,897	35.5	343,962	20.6	686,741	41.1	.....	.....
November	430,358	26.7	366,119	22.7	681,820	42.3	.....	.....
December	600,639	38.7	418,630	27.0	661,515	42.7	.....	.....
Plus or minus yearly adjustment	(44,283)	...	(19,907)	...	.....	...	.....	...
Total for year	5,805,235	30.1	5,905,966	30.6	7,371,299	38.3	.....	...

Again FORD selects - EC&M -



NEARLY 200 WB BRAKES

Over 100 TIME-CURRENT Controllers

Many exacting tests and dependable performance proven from more than 20 years experience with EC&M equipment were the guiding factors in the Ford Motor Company's selection of EC&M Limit Switches (Bulletin 1110-2), EC&M WB Brakes (Bulletin 1004-A) and EC&M Time-Current Controllers (Bulletin 920) for their new blooming and hot mill installations. The extra margin of safety and quality in EC&M equipment insures uninterrupted service to the user. Specify EC&M.



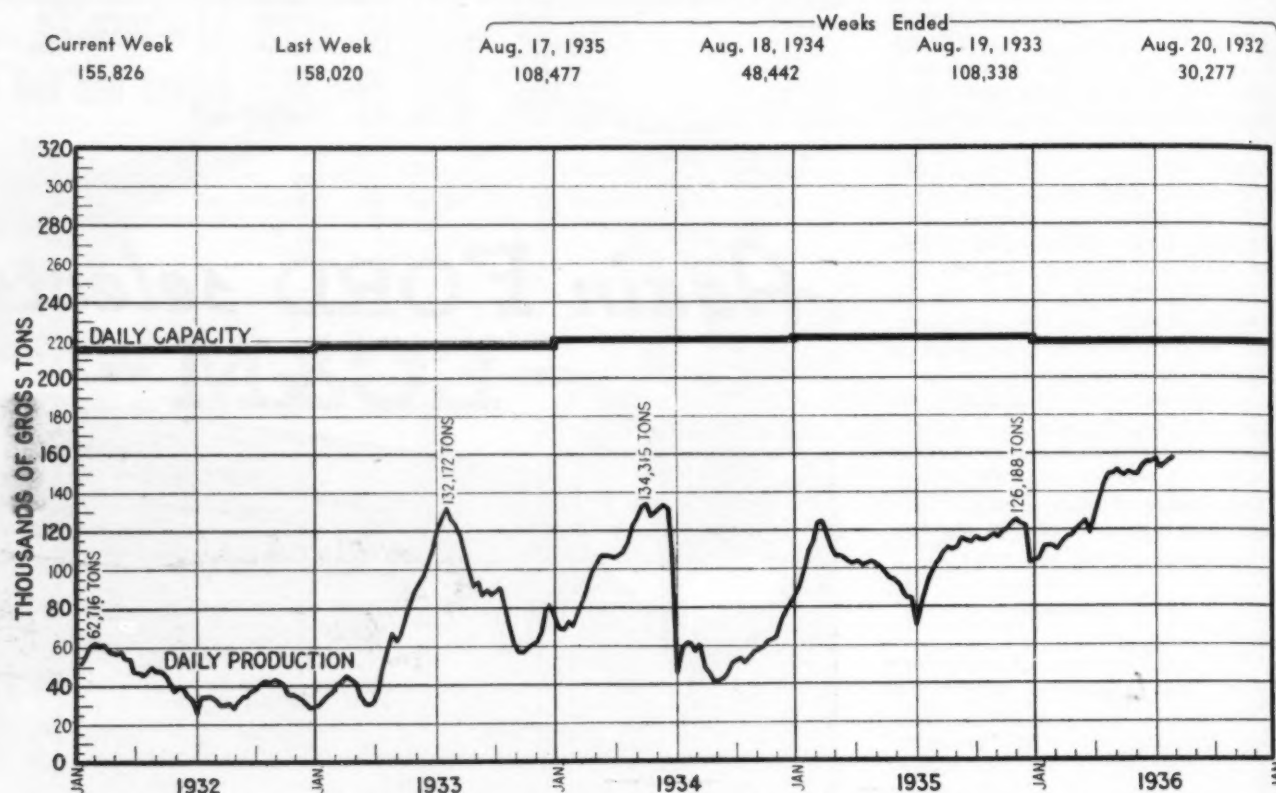
**The ELECTRIC CONTROLLER
and MFG. CO., CLEVELAND, OHIO**



**AUTOMATIC CONTROL for CRANES-MILL DRIVES and MACHINERY
BRAKES-LIMIT STOPS and LIFTING MAGNETS.**

STEEL INGOT PRODUCTION

Daily Tonnage of Bessemer and Open-Hearth Steel Ingots Produced by Weeks, 1932-1936



Latest values plotted on the above chart are for the past week in each case.

STEEL INGOT PRODUCTION BY DISTRICTS:

Per Cent
of Capacity

District	Current Week	Last Week	Weeks Ended		
			July 18, 1936	Aug. 17, 1935	Aug. 18, 1934
Fittsburgh	65.0	69.0	66.0	43.0	14.0
Chicago	73.0	73.0	70.0	57.0	29.0
Valleys	79.0	77.0	72.0	52.0	22.0
Philadelphia	55.0	55.0	50.5	34.0	22.0
Cleveland	78.0	80.0	42.0	50.0	10.0
Buffalo	77.5	77.5	90.0	38.0	24.0
Wheeling	95.0	94.0	96.0	78.0	27.0
Southern	60.5	54.0	52.0	38.0	25.0
Ohio River	81.0	81.0	70.0	60.0	25.0
Western	66.0	65.0	85.0	35.0	10.0
St. Louis	70.0	66.0	90.0	42.0	25.0
Detroit	100.0	100.0	100.0	95.0	76.0
Eastern	90.0	90.0	90.0	35.0	25.0
Aggregate	71.0	72.0	69.0	49.0	22.0
Average Year to Date	62.9	62.6	61.7	45.5	43.6

Weekly Booking of Construction Steel

FROM THE IRON AGE

	Week Ended				Year to Date	
	Aug. 11, 1936	Aug. 4, 1936	July 14, 1936	Aug. 13, 1935	1936	1935
Fabricated structural steel awards.....	30,215	15,000	27,350	15,920	666,405	483,515
Fabricated plate awards.....	555	685	2,080	160	157,550	113,415
Steel sheet piling awards.....	2,700	275	2,920	2,900	33,970	35,685
Reinforcing bar awards.....	17,659	9,750	1,775	1,475	226,990	139,775
Total Lettings of Construction Steel....	51,129	25,710	34,125	20,455	1,084,915	772,390



...SUMMARY OF THE WEEK...

... Brisk demand continues for most steel products.

o o o

... Backlogs assure approximately present rate through September.

o o o

... Scrap again advances as mills speed production.

STEEL ingot production has declined slightly this week, from 72 to 71 per cent, but the change is accounted for mainly by the shutting down for a week's vacation of two plants in the Pittsburgh district, which reduces the rate there from 69 to 65 per cent. There has also been a two-point drop in the Cleveland-Lorain area, but at Wheeling and in the Valleys output is moderately higher and elsewhere is virtually unchanged.

While the volume of new business in some products has declined at a few mills, this is by no means the general experience, as a brisk demand exists, particularly for sheets, bars and structural steel, that is keeping backlogs almost even with shipments. Sheet makers could easily book business for delivery in October were they inclined to do so, but the possibility of price advances for fourth quarter makes this inadvisable. Galvanized sheets are almost unobtainable in less than six to eight weeks; if deliveries extend into the fourth quarter the price then in effect probably will apply.

It is a sellers' market in every sense of the word. A month ago steel companies were concerned as to whether steel production could be maintained at an undiminished rate through August, while now it appears almost certain that there will be no important letdown even in September. Purchasing of steel by automobile companies for 1937, which is now beginning to appear in fairly good volume, will fill up whatever gaps might otherwise occur in rolling mill schedules next month, while in sheets an even tighter situation than now exists may be expected if motor car companies demand quick deliveries.

The pressure at steel mills to get out tonnage rapidly enough to satisfy insistent consumer needs is reflected in the scrap market, where sharp advances have occurred in all important centers. No. 1 heavy melting steel is \$1 higher at Philadelphia, 75c. at Chicago and 25c. at Pittsburgh,

resulting in an increase in THE IRON AGE composite price to \$14.92, highest since Feb. 18, 1930.

ALONG with current strong demand for steel, prospects are developing that promise well for fall. Shipbuilding appears to be on the verge of a healthy revival, more private work is appearing in the construction field and railroads are considering further purchases of rails, track supplies and rolling stock. One large road is obtaining preliminary figures on 35 to 50 heavy locomotives. Some Western roads have decided to lay rails they have had in stock, which indicates the possibility of supplementary rail buying this fall.

Pipe line activity is marked by the placing of two sizable orders—12,000 tons of 12-in. seamless for a line in western Pennsylvania, taken by Jones & Laughlin Steel Corp., and 11,000 tons of 12-in. seamless for a line in West Virginia, awarded to National Tube Co.

Construction work in contemplation includes a number of very large projects. For a floating dry dock at Pearl Harbor, Hawaii, to be built for the United States Navy, nearly 23,000 tons of plates and 6800 tons of shapes will be required; bids to be taken Sept. 30. The Crystal Springs pipe line for San Francisco calls for 20,900 tons of bars and 5000 tons of plates for 60-in. pipe. Awards of fabricated structural steel in the week were upward of 30,000 tons. Three orders for a total of 39 river barges call for 8100 tons of steel.

ALTHOUGH automobile production has registered the first important downtrend, as plants have shut down to change over to new models, the period of transition is expected to be very brief because of the sustained demand for cars. There will be a further decline in output, but meanwhile motor car companies have placed fairly large orders for sheets and other products for new models. Ford has covered its requirements for an initial run of 200,000 cars and Fisher Body for upward of 100,000, deliveries being scheduled for mid-September, when production of new cars will generally be started.

Southern pig iron producers have advanced the Birmingham base 38c. a ton, but this brings a reduction of about 66c. in the delivered price at Cincinnati and some other points near the Ohio River, where Northern basing points will no longer govern. THE IRON AGE composite price on pig iron is reduced from \$18.84 to \$18.73, the first change since November, 1935.



...PITTSBURGH...

... Production drops as two plants shut down for vacations.

o o o

... Rebound expected next week as business volume holds.

o o o

... Two large pipe lines placed; scrap prices go higher.

PITTSBURGH, Aug. 11.—Steel ingot operations in the Pittsburgh district are down four points to 65 per cent of capacity. This situation is due to the banking of furnaces at the Pittsburgh Steel Co. and the National Tube Co. plants in this district. Both of these plants have ceased operations in order that all employees may take their vacation at the same time. Since orders have been coming in rather heavily, a rebound is expected next week. Meanwhile, operations in the Wheeling district have increased one point to 95 per cent of capacity.

General all around demand is persistent, with not much change in the picture except that bookings for wire products are coming in at a slightly lower rate.

The presence of heavy backlogs which run anywhere from four to eight weeks continues to present delivery problems both to the mills and consumers. While there has been some tendency upon the part of customers to anticipate their needs further ahead, this practice has not assumed large proportions. At the rate specifications are coming in at the present time, there is not much chance of backlogs being worked off to any great extent. Especially is this true with regard to sheets. Although the past week's specifications were not as large as in the week before, they are still almost heavy enough to equal shipments. An outstanding feature the past week was the awarding of contracts for two large pipe lines. Jones & Laughlin Steel Corp. received an order for approximately 12,000 tons of 12-in. seamless tube for a line pipe in western Pennsylvania, while the National Tube Co. will furnish about 11,000 tons of 12-in. seamless tube for a line

pipe to be constructed in West Virginia. These two orders, coming at this time, will help support the present operating rate.

Tin plate operations are approximately 90 per cent, with no evidence as yet of a large curtailment in specifications from can makers.

The raw material market has shown further strength, with higher quotations on beehive coke and No. 1 heavy melting scrap.

Pig Iron

There has been no change in the buying practice of consumers, and demand continues at recent levels. If the present trend in scrap prices persists it is definitely possible that foundries in some cases will increase their percentage of pig iron in the melt. While there are no outstandingly large tonnages of pig iron involved in the present movement, producers find that the aggregate tonnage is fully as good as they experienced in July. The Pittsburgh Steel Co. has blown its other blast furnace at Monessen, Pa., and this has been the first time since 1929 that both furnaces have been in operation at the same time.

Semi-Finished Steel

Demand is at about the same rate as that experienced during the past several weeks. There continues to be a good movement of sheet bars to non-integrated mills. Integrated mills which have orders on the books for semi-finished material are still hard pressed for this type of product since their own requirements are exceedingly high owing to present operations. Their stocks are none too plentiful and production of semi-finished material for use in both integrated

and non-integrated mills will probably continue at the present rate for quite some time.

Bolts, Nuts and Rivets

Fair-sized tonnages are being taken by railroads which are actively engaged on a renovation and repair program at their own shops. Such repairs are being made as needed and this type of business should continue for some time to come. Meanwhile, miscellaneous business is holding at recent levels and considerable support is coming from car builders and fabricators.

Bars

In the early part of the past week demand had leveled off slightly; however, within the past few days there has been evidence of improvement. The outlook for new specifications during this month is distinctly good. Mills are, however, still interested in the shipment and delivery problem. While there has been some tendency on the part of consumers to anticipate their needs, no wide movement toward this change of ordering has as yet materialized. Influx of automotive orders late this month or the first of next month will, no doubt, hasten the time when consumers will show more liberal tendencies toward ordering ahead. Practically all tonnages now being shipped are going into immediate consumption.

Cold-Finished Bars

Demand over the past week has been lighter and does not come up to the orders booked during the same period in July. Producers continue to be behind in delivery and on some sizes are as far behind as seven or eight weeks. Orders on the books at the present time are sufficient to keep the mills extremely busy, on the whole, during the remainder of this month. However, bookings from the automotive interests are expected to materially increase before the middle of September.

Reinforcing Steel

New business has leveled off further during the past week. However, this seasonal tendency has been expected. Producers, however, are fairly far behind on shipments and will be fully occupied for weeks to come. Price situation is showing further signs of strength.

Steel Sheet Piling

Inland Steel Co. has been awarded a contract for 2100 tons of steel sheet piling to be used in the construction of dam No. 21 in the Mississippi River, Quincy, Ill. A fair-sized volume of small ton-

A Comparison of Prices

Market Prices at Date, and One Week, One Month, and One Year Previous:
Advances Over Past Week in Heavy Type, Declines in Italics

Rails and Semi-finished Steel

Per Gross Ton:	Aug. 11, 1936	Aug. 4, 1936	July 14, 1936	Aug. 13, 1935
Rails, heavy, at mill.....	\$36.37 1/2	\$36.37 1/2	\$36.37 1/2	\$36.37 1/2
Light rails, Pittsburgh.....	35.00	35.00	35.00	35.00
Rerolling billets, Pittsburgh..	30.00	30.00	30.00	27.00
Sheet bars, Pittsburgh.....	30.00	30.00	30.00	28.00
Slabs, Pittsburgh.....	30.00	30.00	30.00	27.00
Forging billets, Pittsburgh....	37.00	37.00	37.00	32.00
Wire rods, Nos. 4 and 5, P'gh.	38.00	38.00	38.00	38.00
	Cents	Cents	Cents	Cents
Skelp, grvd. steel, P'gh, lb...	1.80	1.80	1.80	1.70

Finished Steel

Per Lb.:	Cents	Cents	Cents	Cents
Bars, Pittsburgh.....	1.95	1.95	1.95	1.80
Bars, Chicago.....	2.00	2.00	2.00	1.85
Bars, Cleveland.....	2.00	2.00	2.00	1.85
Bars, New York.....	2.30	2.30	2.30	2.15
Plates, Pittsburgh.....	1.90	1.90	1.90	1.80
Plates, Chicago.....	1.95	1.95	1.95	1.85
Plates, New York.....	2.19	2.19	2.19	2.09
Structural shapes, Pittsburgh	1.90	1.90	1.90	1.80
Structural shapes, Chicago.....	1.95	1.95	1.95	1.85
Structural shapes, New York.	2.16 1/4	2.16 1/4	2.16 1/4	2.06 1/4
Cold-finished bars, Pittsburgh	2.25	2.25	2.25	1.95
Hot-rolled strips, Pittsburgh.	1.95	1.95	1.95	1.85
Cold-rolled strips, Pittsburgh	2.60	2.60	2.60	2.60
Hot-rolled annealed sheets, No. 24, Pittsburgh.....	2.50	2.50	2.50	2.40
Hot-rolled annealed sheets, No. 24, Gary.....	2.60	2.60	2.60	2.50
Sheets, galv., No. 24, P'gh..	3.20	3.20	3.20	3.10
Sheets, galv., No. 24, Gary..	3.30	3.30	3.30	3.20
Hot-rolled sheets, No. 10, Pittsburgh.....	1.95	1.95	1.95	1.85
Hot-rolled sheets, No. 10, Gary.....	2.05	2.05	2.05	1.95
Cold-rolled sheets, No. 20, Pittsburgh.....	3.05	3.05	3.05	2.95
Cold-rolled sheets, No. 20, Gary.....	3.15	3.15	3.15	3.05
Wire nails, Pittsburgh.....	2.10	2.10	2.10	2.60
Wire nails, Chicago dist. mill	2.15	2.15	2.15	2.65
Plain wire, Pittsburgh.....	2.40	2.40	2.40	2.30
Plain wire, Chicago dist. mill	2.45	2.45	2.45	2.35
Barbed wire, galv., Pittsburgh	2.60	2.60	2.60	3.00
Barbed wire, galv., Chicago dist. mill.....	2.65	2.65	2.65	3.05
Tin plate, 100 lb. box, P'gh.	5.25	5.25	5.25	5.25

On export business there are frequent variations from the above prices. Also in domestic business, there is at times a range of prices on various products, as shown in our detailed price tables.

Pig Iron

Per Gross Ton:	Aug. 11, 1936	Aug. 4, 1936	July 14, 1936	Aug. 13, 1935
No. 2 fdy., Philadelphia.....	\$21.3132	\$21.3132	\$21.3132	\$20.3132
No. 2, Valley furnace.....	19.50	19.50	19.50	18.50
No. 2, Southern Cin'tl.....	20.2007	20.2007	20.2007	19.2007
No. 2, Birmingham†.....	15.58	15.50	15.50	14.50
No. 2, foundry, Chicago*.....	19.50	19.50	19.50	18.50
Basic, del'd eastern Pa.....	20.8132	20.8132	20.8132	19.8132
Basic, Valley furnace.....	19.00	19.00	19.00	18.00
Malleable, Chicago*.....	19.50	19.50	19.50	18.50
Malleable, Valley.....	19.50	19.50	19.50	18.50
L. S. charcoal, Chicago.....	25.2528	25.2528	25.2528	24.2528
Ferromanganese, seab'd car- lots.....	75.00	75.00	75.00	85.00

†This quotation is for delivery in South; in the North prices are 38c. a ton under delivery quotations from nearest Northern furnace.

*The switching charge for delivery to foundries in the Chicago district is 60c. per ton.

Scrap

Per Gross Ton:				
Heavy melting steel, P'gh...	\$15.75	\$15.50	\$14.00	\$13.00
Heavy melting steel, Phila...	14.00	13.00	12.25	11.00
Heavy melting steel, Ch'go...	15.00	14.25	13.25	12.25
Carwheels, Chicago.....	15.00	15.00	13.50	12.75
Carwheels, Philadelphia....	15.25	14.75	14.25	11.25
No. 1 cast, Pittsburgh.....	14.75	14.75	14.75	13.50
No. 1 cast, Philadelphia.....	15.25	15.00	14.25	11.25
No. 1 cast, Ch'go (net ton)...	13.50	13.00	12.00	11.00
No. 1 RR. wrot., Phila.....	14.75	14.75	14.75	10.25
No. 1 RR. wrot., Ch'go (net)...	13.75	13.00	11.50	9.50

Coke, Connellsville

Per Net Ton at Oven:				
Furnace coke, prompt.....	\$3.65	\$3.50	\$3.50	\$3.25
Foundry coke, prompt.....	4.00	4.00	4.00	4.00

Metals

Per Lb. to Large Buyers:	Cents	Cents	Cents	Cents
Electrolytic copper, Conn.....	9.75	9.75	9.50	7.75
Lake copper, New York.....	9.87 1/2	9.87 1/2	9.62 1/2	8.12 1/2
Tin (Straits), New York.....	43.25	43.00	44.00	49.62 1/2
Zinc, East St. Louis.....	4.80	4.80	4.75	4.50
Zinc, New York.....	5.17 1/2	5.17 1/2	5.12 1/2	4.87 1/2
Lead, St. Louis.....	4.45	4.45	4.45	4.05
Lead, New York.....	4.60	4.60	4.60	4.20
Antimony (Asiatic), N. Y....	12.50	13.00	13.00	13.00

The Iron Age Composite Prices

Finished Steel

Aug. 11, 1936	2.159c. a Lb.
One week ago	2.159c.
One month ago	2.159c.
One year ago	2.124c.

Based on steel bars, beams, tank plates, wire rails, black pipe, sheets and hot-rolled strips. These products represent 85 per cent of the United States output.

	High	Low
1936.....	2.159c., July 7	2.084c., Mar. 10
1935.....	2.130c., Oct. 1	2.124c., Jan. 8
1934.....	2.199c., April 24	2.008c., Jan. 2
1933.....	2.015c., Oct. 3	1.867c., April 18
1932.....	1.977c., Oct. 4	1.926c., Feb. 2
1931.....	2.037c., Jan. 13	1.945c., Dec. 29
1930.....	2.273c., Jan. 7	2.018c., Dec. 9
1929.....	2.317c., April 2	2.273c., Oct. 29
1928.....	2.286c., Dec. 11	2.217c., July 17
1927.....	2.402c., Jan. 4	2.212c., Nov. 1

Pig Iron

\$18.73 a Gross Ton
18.84
18.84
17.84

Based on average of basic iron at Valley furnace and foundry irons at Chicago, Philadelphia, Buffalo, Valley and Southern iron at Cincinnati.

	High	Low
1936.....	\$18.84, Jan. 7	\$18.73, Aug. 13
1935.....	18.84, Nov. 5	17.83, May 14
1934.....	17.90, May 1	16.90, Jan. 27
1933.....	16.90, Dec. 5	13.56, Jan. 3
1932.....	14.81, Jan. 5	13.56, Dec. 6
1931.....	15.90, Jan. 6	14.79, Dec. 15
1930.....	18.21, Jan. 7	15.90, Dec. 16
1929.....	18.71, May 14	18.21, Dec. 17
1928.....	18.59, Nov. 27	17.04, July 24
1927.....	19.71, Jan. 4	17.54, Nov. 1

Steel Scrap

\$14.92 a Gross Ton
14.25
13.17
12.08

Based on No. 1 heavy melting steel quotations at Pittsburgh, Philadelphia and Chicago.

	High	Low
1936.....	\$14.92, Aug. 13	\$12.67, June 9
1935.....	13.42, Dec. 10	10.33, April 23
1934.....	13.00, Mar. 13	9.50, Sept. 25
1933.....	12.25, Aug. 8	6.75, Jan. 3
1932.....	8.50, Jan. 12	6.43, July 5
1931.....	11.33, Jan. 6	8.50, Dec. 29
1930.....	15.00, Feb. 18	11.25, Dec. 9
1929.....	17.58, Jan. 29	14.08, Dec. 3
1928.....	16.50, Dec. 31	13.08, July 2
1927.....	15.25, Jan. 11	13.08, Nov. 22

nages involving 50 to 200 tons has been let during the past week. U. S. Engineers Office at Rock Island, Ill., will take bids Aug. 18 on 1800 tons of permanent steel sheet piling and a large tonnage of temporary piling to be used in the construction of dam No. 22 at Saverton, Mo.

Shanes and Plates

This week's awards show quite a few private projects. Inquiries this week were not very heavy and were composed mostly of government financed jobs. The Dravo Contracting Co. has been awarded a contract for 10 all-welded steel coal barges; approximately 1500 tons of plates and shanes will be required. Miscellaneous demand for shanes and plates after having eased off slightly for a few weeks has shown signs of improvement, with this week's aggregate bookings better than that experienced a week ago. Mill backlogs continue heavy.

Tin Plate

There has been no outstanding change in this market over the past week. However, operations are up five points to 90 per cent. One large local producer cancelled vacations and this, combined with cooler weather, raised the operations in this particular plant considerably. As yet there have been no unusual curtailments in specifications from can makers. While there have been some cases of releases for shipment being held up, drought conditions so far have not seriously interfered with tin plate production. Orders from general line can makers and miscellaneous sources continue in good volume.

Tubular Products

Line pipe orders have taken the spotlight this week. Jones & Laughlin Steel Corp. has been awarded an order for 12,000 tons of 12-in. seamless tube. The material is for 113 miles of pipe line to run from the Peoples Natural Gas Co. terminus near Limestone, Clarion County, to Hebron Township, Potter County, where the western end of the New York State Natural Gas Co.'s line begins. The National Tube Co., Ellwood City, Pa., has received an award for approximately 11,000 tons of 12-in. seamless tube for a 96-mile line pipe to be constructed by the Hope Natural Gas Co. This line will run from Hastings, W. Va., to Cornwell, W. Va. Another line pipe project which is awaiting the outcome with the New York State Public Service Commission is a 14-in. line to run from western Pennsylvania to Rochester, N. Y. Meanwhile, specification and movement

of oil-country goods persist at levels previously reported.

Wire Products

Demand for both merchant and manufacturing wire has eased off slightly during the past week. This situation was more or less expected and the next few weeks will probably show a light demand. Resumption of automobile buying in the near future will give support to this market. Since jobbers' stocks of merchant wire products are not built up, inquiries for these items are not expected to show any drastic curtailment.

Sheets

Specifications are down this week compared with the previous week. However, the latter was an exceptionally good period and the rate of incoming orders at the present time is sufficient to keep backlogs unchanged. Producers in this district are anywhere from four to eight weeks behind on delivery. Within the past few days the diversification of miscellaneous orders has increased. There has been a moderate increase in new business from automobile manufacturers; large orders are expected by the first week or so in September. With the present situation existing in relation to deliveries, it will be necessary for consumers to anticipate their needs in order to get the desired delivery. The shipping problem has reached the point where mills are under constant pressure from their customers.

Strip Steel

Aggregate demand for hot-rolled strip has eased off slightly over the past week. This condition, however, is thought to be temporary since there has been no evidence of any sharp curtailment. Fair-sized tonnages are coming in from miscellaneous sources and, while some bookings are from parts makers for 1937 models, this type of business will not reach any great volume until later this month. Bed manufacturers have been active recently as have makers of sleds. Fair-sized orders are also being received from manufacturers of electrical equipment, radio, and radio parts.

Coal and Coke

Lake movement of coal from this district remains at recent levels. The coke situation seems to be getting tighter as time goes on. As a result of increased demand for beehive furnace coke, prices for furnace, f.o.b., Connellsville, prompt have gone up to \$3.65 to \$3.75, having previously been quoted at \$3.50 to \$3.65. Practically all ovens capable of produc-

tion are now operating. It is understood a merchant blast furnace in the nearby Ohio territory may be blown in shortly. Representatives from this company have been inquiring for beehive coke. Meanwhile, steel companies which have been in the domestic trade in the past have been unable to lay up accumulations for fall business owing to their own activity. Some beehive coke producers who concentrated their business on domestic sizes, have been producing furnace sizes since the recent activity in this grade. All indications point to a tight situation in the domestic coke market this fall.

Acetylene Group to Meet In St. Louis

THE 37th annual convention of the International Acetylene Association will be held in St. Louis at the Jefferson Hotel, Nov. 18-20. Oxy-acetylene welding and cutting of metals, including a number of new developments, will feature the technical sessions, held each afternoon. Wednesday evening, Nov. 18, is to be devoted to a forum on welding and cutting, and Thursday evening to a series of round-table discussions on oxy-acetylene welding and cutting practices.

A. I. M. E. Will Meet At Cleveland, Oct. 19

The Institute of Metals Division and the Iron and Steel Division of the American Institute of Mining and Metallurgical Engineers will hold individual technical sessions and a joint round-table discussion as a part of the program of National Metals Week in Cleveland during the week of Oct. 19.

Technical meetings of the Institute of Metals Division will include sessions on aging of metals, constitution of alloy systems, and a session on general non-ferrous metallurgy. The Iron and Steel Division has scheduled sessions on blast furnace operation, open-hearth steel problems, and on X-ray metallography. The joint round-table discussion sponsored by both divisions will include papers on stress-strain relations, the yield-tensile ratio, Poisson's ratio and ductility factors, fatigue, the transverse notch bar test, tension impact testing, and the relation of hardness to wear and seizure.



CHICAGO

... *Market continues to show uniform trend.*

... *Delivery delays being felt by many steel users.*

... *Scrap prices soaring.*

CHICAGO, Aug. 11. — This market is showing uniformity which is unexpected at this time of year. Ingot output is unchanged at 73 per cent of capacity and both sales and specifications of finished steel products remain at a high level, in fact, comparable with the early weeks in July.

The pinch of deliveries is being felt in many places, an unusual one being fabricating shops with direct mill connections. Several of those shops have been forced to call upon local warehouses for some urgently needed steel.

The movement of tin plate remains high, the only drawback being the drought. However, there is talk of canning commodities which ordinarily do not reach into the large pack field. These would serve as substitutes for high-priced and scarce vegetables and, if the movement gets under way, can companies will regain some of the ground lost because of the drought.

An inquiry for 5000 tons of rails promises to be the opening of another rail buying movement. The thread of a carryover is being averted by the decision of Western railroads to put all rails which are on hand or on order in track.

Material orders for 1937 model automobiles are being placed, and in several instances farm equipment manufacturers have turned production curves upward from the recent low. It is reported that Chevrolet is combining the inventory period and the switch to new models and that it will resume operations Sept. 8.

Scrap prices are soaring.

Pig Iron

All eyes are on the scrap market as a possible indicator of fourth quarter pig iron prices. August shipments are slowly sliding, but the trade believes that the total for this month will closely approximate

that of June, which compared favorably with the peak month of July. A pick-up is dependent upon the automobile industry.

Reinforcing Bars

This market is dragging below the July rate, but the outlook is favorable and most shops are busy with heavy backlogs, sufficient in many cases to assure profitable operations for three months. New inquiries are not in large volume, but their character is satisfying as a fair amount of private work, including a packing plant in Iowa, is appearing. Apartment construction, long dormant, promises to come to life near the end of the month, when bids may be taken on a 400-ton project.

Cast Iron Pipe

Toledo, Ohio, has placed 400 tons of 6 to 24-in. pipe and in so doing it stands alone from the viewpoint of attractive tonnage. Small orders for WPA work are less numerous, and it is reported that WPA headquarters is pressing to terminate one way or the other projects which have been contemplated for many months. It is understood that decisions to proceed with the work or withdraw requests for aid must be made by Oct. 1.

Structural Material

The week's business is characterized by a liberal number of private jobs, and, strange as it may seem, this class of work outweighs in tonnage those projects which call for the expenditure of public funds. A farm implement plant addition at Springfield, Ill., will take 1200 tons, and a public utility is in the market for 1000 tons. Several other plant additions will soon add attractive tonnages to mill books, which are growing daily and which will afford excellent shipments for the next 60 days. The matter of deliveries is still rather critical, and some fabri-

cating shops with direct mill connections are being forced to turn to local warehouses for some of the materials needed on rush orders.

Rails

The New York, Chicago & St. Louis is in the market for 5000 tons of rails and several secondary tonnages are in the making. In the early stages of the drought several Western lines, though accepting shipments, against trail orders, curtailed putting them in track. For a time such action threatened a substantial carryover. However, in recent days those railroads have decided to lay the rails and this threat against future commitments is soon to be removed. These new plans are already acting to speed accessory purchases, which total 4000 tons.

Plates

Mills are sharing liberally in the current run of structural business and all signs point to heavy shipments during the next 45 days. A local plant is adding a welding shop, and here and there are other signs of prosperity among plate fabricators. There is talk of further railroad equipment buying, the Chicago & Eastern Illinois being one of the railroads mentioned. Low bidder is announced on the Mississippi River dam at Bellevue, Iowa, and contracts have been awarded for the Illinois River dam near Beardstown, Ill. The American Bridge Co. has taken 4000 tons for 17 steel coal barges, and it is reported that the Dewey Portland Cement Co., Kansas City, has ordered 12 barges, requiring 2600 tons of steel.

Bars

Automobile buying is again an important factor in this market. Chevrolet is reported to have ordered steel for 120,000 new models, and Chrysler is on the verge of taking a similar step. Tractor plants are still busy and it now appears that tillage machinery and the prospects for its fall sale are most seriously hurt by the drought. Export business in farm equipment remains good. Miscellaneous demand for bar mill products has shown little variation over the past two months.

Wire Products

Automobile plants are buying on a small scale for 1937 models and it may be two or three weeks before buying starts on a broad base. Country business is still in the dumps, the controlling factors being the drought and the season of the year. However, the change from July is not as radical as has been the change in some more fav-

orable years. Miscellaneous manufacturers are still actively in the market. Wire mill operations remain at 65 per cent of capacity.

Sheets

New orders are reaching mills rather sluggishly and the gap between sales and shipments is widening. However, some new automobile business is appearing and it is expected to grow to larger volume soon. Production still is close to capacity.



..BIRMINGHAM..

... Steel output gains as orders hold up.

... Fairfield mills on 24-hr. schedule.

BIRMINGHAM, Aug. 11.—There is an increase in steel ingot production this week. The Tennessee Coal, Iron & Railroad Co. has added another open hearth at Fairfield, increasing the Fairfield total

to seven out of nine and the district's total to 14, just one less than the high point of the year, when the Ensley rail mill was operating. The Tennessee company continues to operate three at Ensley and Gulf States Steel, four at Gadsden. For the last three weeks 13 units were operating.

The continuation of high steel production, without the aid of rails, is a good indication of the excellent condition of the Birmingham steel market at this time. The Fairfield plate and sheet mills are operating at capacity on a 24-hr. schedule. The structural and bar mills are also on steady schedules, though not quite at the same rate as plates and sheets.

Bookings continue good in all lines except rails. Plates and sheets are the most active, but there is also a good volume of structural steel and bars. Wire products buying is better than was expected for this time of year.

The pig iron situation is unchanged. Buying is still largely on a spot basis. The outlook for August, however, is better and improvements in both bookings and shipments are expected. The active blast furnace total remains at 10.



..SAN FRANCISCO..

... Mill operations continue at near capacity.

o o o

... Building includes some industrial jobs.

SAN FRANCISCO, Aug. 10.—Mill production on the Pacific Coast continues to run at near capacity with no drop in the rate since the beginning of the quarter. Sustained demand from all sources is responsible for the favorable condition. Warehouse business is reported to have dropped slightly, although jobbers' steel purchases have been heavier, indicating a building up of inventory.

With the Japanese buyers back in the market, there is decided strength in scrap prices.

Lettings during the past week aggregated 2241 tons of structural steel and 3916 tons of reinforcing bars. Plate awards were limited and cast iron pipe placements were entirely absent. Outstanding was the letting to Bethlehem Steel Co. for 800 tons of bars and 1800 tons of reinforcing trusses for paving the Golden Gate bridge, over the entrance of San Francisco Bay. Consolidated Steel Corp. took 849 tons of shapes for bridges in Los Angeles and Soule Steel Co. was awarded 1190 tons of reinforcing bars for three projects.

Still pending is the contract in Los Angeles for 3572 tons of cast iron pipe. No award has yet been reported by the Metropolitan Water District on the upper feeder of the Colorado River aqueduct distribution system. The precast alternates, on which Union Concrete Pipe Corp. is low bidder, specify 3570 tons of steel cylinder reinforcement and 3515 tons of reinforcing bars. No placement has yet been made in San Francisco on the two Matson freighters in which approximately 4000 tons of shapes and 6000 tons of plates are involved.

Although school construction and governmental work constitute the bulk of the new projects listed during the week, there were also a number of industrial building contracts which indicate the growing strength of business activity on the West Coast.

No scrap . . .



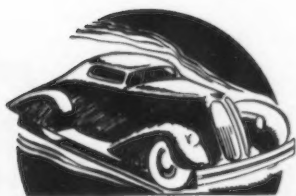
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malleable trade

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AMERICAN IRON AND STEEL WORKS
PITTSBURGH, PENNSYLVANIA



... CLEVELAND ...

... Brisk demand for steel continues from many sources.

o o o

... Large buyers plead with mills for quicker deliveries.

o o o

... Automotive orders for new models now being placed.

INGOT output in the Cleveland-Lorain district declined two points this week to 78 per cent of capacity, there being one less open hearth operating. The ingot rate in the Valleys, however, rose two points to 79 per cent.

Brisk demand for steel of all categories continues from a variety of sources. The only industry in this area not showing pre-depression virility being that of shipbuilding. Refrigerator plants are still buying sheets against the expected seasonal decline in operations. Automotive orders for new models are coming through in volume, with releases calling for shipment in early September. Parts plant buying is weak, however.

The delivery situation has not improved and mills are being hard pressed, large customers pleading by long distance 'phone for prompter shipments to meet current requirements. No fear of labor trouble is seen in these demands. There has been considerable shopping around for better delivery, but no orders have been switched as all mills are well booked.

No business is being booked beyond third quarter delivery and sellers talk frankly of possible price increases in face of rising costs and impending wage increases. Strip steel is following the trend in sheet sales very closely. Stove and refrigerator buying is still strong and orders from automotive parts plants are coming in, though releases are light. Hot-rolled steel is now being booked for delivery in second week of September as mills work against good backlogs.

Pig Iron

The market continues strong, due to shortage of stocks at the foundries. Buying is particularly active on the part of foundries serving the railroad equipment field, including both gray iron and malleable foundries. In fact, Cleveland's two principal malleable foundries are extremely active at this time on this account. Agricultural implement plants are again buying foundry iron after a slight let-up when repercussions from drought conditions were as yet unknown. Their confidence seems to be renewed and the plants are going ahead. Heat equipment manufacturers are beginning to accept sizable deliveries on pig iron in line with the upward seasonal trend in this industry. Non-integrated steel mills have not yet changed their schedules of pig iron purchases, but it is anticipated that a further rise in scrap prices should effect a change in the melting ratio of scrap to pig iron. An additional merchant pig iron furnace was blown in at Toledo during the past week.

Bars, Plates and Shapes

Reinforcing bars are still moving very slowly in the Cleveland area. Demand for plates and shapes is holding up very well, as most of the structural fabricating shops are well occupied and have at least two months' work ahead. In fact, they are pressing for delivery of material, though most of the projects are in small tonnages, but well diversified. No large structural projects are expected in the near future. A 250-ton industrial building award is the largest item now pending.

The Nickel Plate Railroad has an

inquiry out for 1700 tons of tie plates, and it is expected that about 9000 tons of rails will soon follow. No car buying is anticipated for the remainder of the year on the part of roads with purchasing headquarters in Cleveland. Action is still awaited on car repair work ordinarily scheduled for September.

There have been several purchases of bars for automotive forgings, but there is as yet no real volume coming from this source. One supplier reports sales of carbon bars in the first 10 days of August substantially ahead of the July period, with shipments up also.

Bolts, Nuts and Rivets

Bolt and nut sales are above the seasonal average, although the first week in August showed a slight drop compared with the volume recorded in July. Orders are coming through from automobile and automotive parts plants in line with new model requirements, but there have been no releases against them in any volume. Rivet sales continue strong against the usual summer seasonal decline although shipments at present are exceeding sales. Buying of rivets for railroad car construction has fallen off as the bulk of the car orders have been placed, so that rivet makers look to construction activity for their mainstay during the coming months.

Sheets

Refrigerator plants are still buying sheets in good quantity, although in other years the seasonal decline in activity was well under way by mid-August. All lines, in fact, seem to be active at this time. Sustaining factors of the present satisfactory market are orders from stove plants, washing machine manufacturers, sign makers, and enameled kitchen ware manufacturers. Incidentally, washing machines, stoves, and refrigerators call for a lot of light structural shapes, running into huge footage, although light tonnage. Galvanized sheets for heating and ventilating ducts are also beginning to move in fair volume as the season gets under way. As yet there is little buying for 1937 model requirements on the part of local automotive parts plants. Some activity is reported in Toledo. Several large buys of sheets made last week by Ford Motor Co. and Fisher Body Corp. are confirmed by mills in this area. Shipments will start in early September. The delivery situation in sheets has not improved in recent weeks.



RAILROAD BUYING

Receivers for Central of Georgia Railway have asked authority from Interstate Commerce Commission to issue \$400,000 in equipment trust certificates to purchase 200 50-ton coal cars from Pullman-Standard

Car Mfg. Co. The cars were recently ordered.

Savannah & Atlanta Railway has withdrawn its request for a \$1,500,000 Reconstruction Finance Corp. loan.

United Fruit Co. is inquiring for 5 or 10 locomotives of 2-8-2 type for service in Guatemala.

Canadian National Railways has placed an order with Timken Roller Bearing Co., Canton, Ohio, for bearings to equip engine trucks of four existing class U-1-A passenger locomotives.



..GREAT BRITAIN..

... British pig iron supply still low.

... Construction, ship-building, engineering and motor industry heavy steel users.

... English railroad to spend over \$16,000,000 on 1937 rolling stock.

LONDON (by cable) Aug. 10.—The British iron and steel market is quieter owing to the holidays, but production and consumption are well maintained.

Pig iron makers are heavily sold and are still obliged to restrict export sales. Additional furnaces are restarting in September, but the supply position is likely to remain tight. Spanish troubles have not yet resulted in an ore shortage as works are well stocked, but supplies from other sources are being accelerated.

Bridge building and factory extensions have increased while ship-building and engineering activity and the motor trade boom continue to provide a heavy volume of work for steel makers. The sheet demand has been checked by the recent price advance.

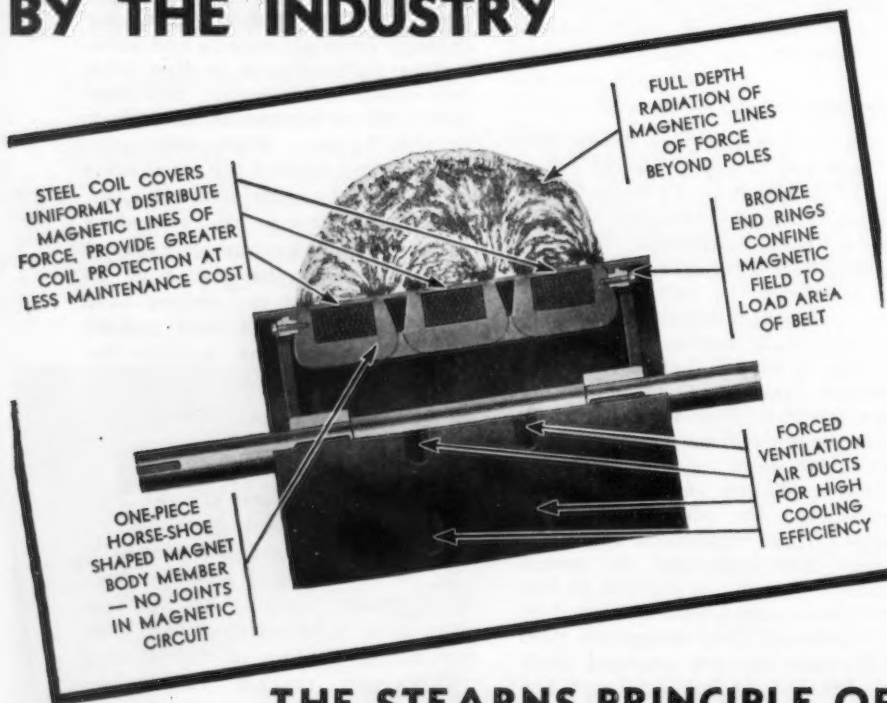
The London Midland & Scottish railway proposes to spend £3,250,000 on new rolling stock for 1937. Export demand is improving, notably from Canada and Russia.

Home and export inquiries for tin plate are again broadening. Makers are well booked up to the end of October, but there is room for improvement beyond then.

Continental iron and steel is fairly active but is slightly quieter owing to the holidays.

International Wire Export Co. has been reported extended until the end of 1940, provided the national syndicates are prolonged likewise.

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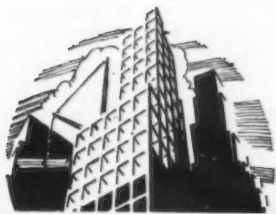
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... NEW YORK ...

... *Steel bookings show decline from July volume.*

o o o

... *Sheet mills have backlogs for remainder of quarter.*

o o o

... *Pig iron demand shows moderate improvement.*

NEW YORK, Aug. 11.—While orders for some products have declined this month as compared with July bookings, the pressure for deliveries is insistent and steel makers still see no signs of a letdown in production of more than minor proportion during August and September. As no business is being booked as yet for fourth quarter delivery, the mills are unable to predict what that period will bring, but they see no reason for doubting that present momentum will carry through the remainder of the year without important change.

In sheets the larger mills are

comfortably booked to the end of September and are accepting business only from regular customers. Some mills cannot offer a better delivery promise than eight weeks on galvanized sheets, which means that such orders would be taken only on the basis of the price that may be in effect at that time. Makers of structural shapes are under strong pressure for deliveries against building contracts that were closed during June and July.

There is a falling off in the volume of new tin plate business, but mills are well booked, and indications are that the present operating

rates will be fairly well maintained until Oct. 1, at least.

Pig Iron

This market reflects the satisfaction of sellers with the orderly manner in which daily sales are proceeding, and the continued belief that business will hold up over the remainder of the year. Total tonnage is not heavy, but the buying is consistent, and tends principally to involve iron needed for immediate consumption. On this basis, there is reason to believe customer's stocks are small, and that purchases will therefore be sustained. Likewise the melt at most foundries appears to be gradually improving. Prices, being stable, are not a current influence, and increased industrial activity is thus about the only recent development that can be pointed to in explanation of the better undertone prevailing in the New York market.

Reinforcing Bars

The publication of resale prices by bar distributors has thus far worked with fair success in the stabilization of the market, but some distributors believe that the plan has not yet received an adequate test to determine its practicability. Even though this method appears to have the sanction of the price discrimination provisions of the Robinson-Patman law, there are suggestions that means will be found by some bidders to cut prices without risk of legal entanglements. Others take the view that the influence of the Robinson-Patman law, together with the desire of some sellers to bring about a stabilized market, will strengthen the price situation considerably and minimize the number of price violations. New business is rather slack, but there is a fair volume of work pending, including 3000 tons for the housing project in the Williamsburgh section of Brooklyn, on which Starrett Brothers & Eken, Inc., is low bidder. Bids will be taken at West Point on Aug. 26, on two armories for the military academy calling for 500 tons of bars. J. F. Cogan Co., New York, was low bidder on 350 tons of bars for a section of the Sixth Avenue subway, while another section will come up for bids on Sept. 11. The Corbetta Construction Co. was low bidder on Triborough Bridge work requiring 350 tons of bars.

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...PIPE LINES...

Peoples Natural Gas Co., 545 Wm. Penn Way, Pittsburgh, has awarded the contract for 12,000 tons of 12-in. seamless tube to the Jones & Laughlin Steel Corp., Pittsburgh. The material is for 113 miles of pipe line to run from a point near Lime-stone, Clarion County, Pa., to connect with the western end of New York State Natural

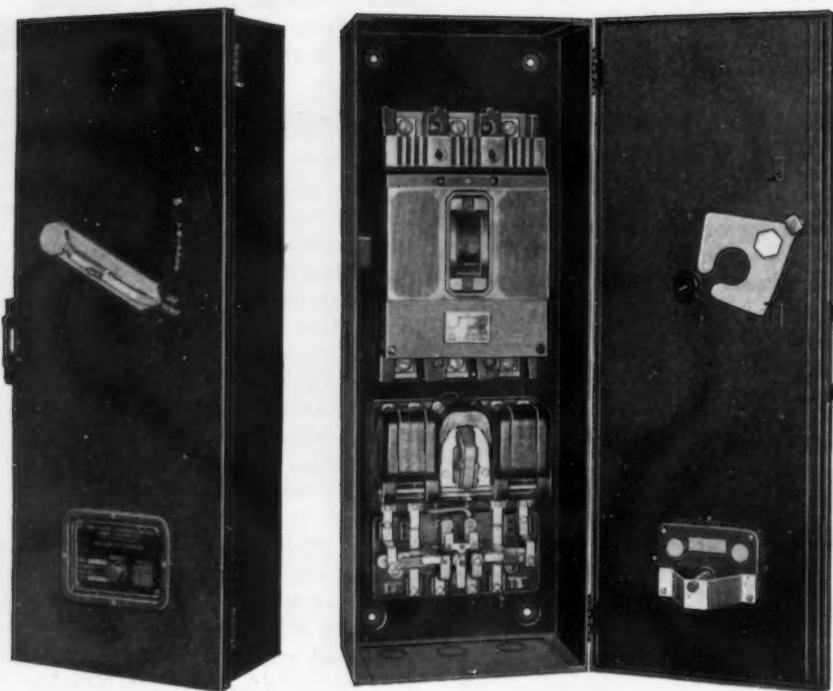
Gas Co. line in Hebron Township, Potter County.

Hope Natural Gas Co., 545 William Penn Way, Pittsburgh, has let the award for approximately 11,000 tons of 12-in. seamless tube to the National Tube Co., Ellwood City, Pa., for a natural gas line to run from Hastings, W. Va., to Cornwell, W. Va.

Chicago opened bids Aug. 10 on 15,000 ft. of 2-in. standard steel pipe.

Panhandle Eastern Pipe Line Co., Kansas City, has awarded contract to J. R. Stewart Construction Co. for about 15 miles of 4 to 16-in. Lindewelded steel pipe in vicinities of Dumas, Tex., Hugoton and Liberal, Kan. Construction will start about Aug. 17.

Clark-Sundh



Here is the latest development in a Combination Across-Line A.C. Starting Switch. An externally operated Air Circuit Breaker takes the place of the usual fused disconnect switch. The Air Circuit Breaker therefore serves the purpose of a disconnecting switch and provides short circuit overload protection. This Starter may be operated by any one of the various remote control stations such as Push Buttons, Float Switches, Pressure Regulators, etc.

The toggle action quick-make and break feature of the circuit breaker provides high interrupting capacity.

The Breaker is operated by trip-free handle.

Thermal overload relays are also included with provision for external reset. This device is known as Clark Bulletin 6020.

THE CLARK CONTROLLER CO.

1146 East 152nd St.
CLEVELAND, OHIO

Peoples Power Co., Moline, Ill., subsidiary of United Light & Power Co., 105 West Adams Street, Chicago, plans welded steel pipe line from connection with main trunk line of Natural Gas Pipe Line Co. of America, Inc., near Chicago to Moline, East Moline, Rock Island, Ill., and vicinity, for natural gas transmission to these points, where connection will be made with existing distributing systems of first noted company. Application has been made for permission. Pipe line of Natural Gas company extends from Texas gas field district to Chicago area.

Peppers Gasoline Co., Enid, Okla., plans about 6000 ft., 6-in., and 7700 ft., 4-in., welded steel pipe in High Street area, Oklahoma City, Okla., for gasoline transmission. Cost close to \$25,000. C. W. James, Oklahoma City, is consulting engineer.

Texarkana, Tex., has authorized bond issue of \$1,200,000 for municipal gas distributing plant and steel pipe line distribution system. Proposed to begin work soon.

Clinton Murchison, First National Bank Building, Dallas, Tex., is at head of project to construct and operate a welded steel pipe line from oil field district near Cayuga, Tex., to Athens, Tex., and vicinity, about 17 miles, for oil transmission. Surveys are under way. Work on line scheduled to start early in fall.

Greensboro Gas Co., Union Trust Building, Pittsburgh, plans 4-in. welded steel pipe line across Cheat River, near Point Marion, Pa., for gas transmission to Greensboro, Pa., and vicinity, where company furnishes service.

General Purchasing Officer, Panama Canal, Washington, asks bids until Aug. 24 for 5100 ft. welded steel pipe, 1/4 to 5-in., and 4600 ft., galvanized welded steel pipe, 1/8 to 3/8-in. (Schedule 3172).

Great Lakes Steel Corp., Ecorse, Detroit, has let contract to Somet-Solvay Engineering Corp., New York, for 48-in. welded steel pipe line from its Hanna blast furnaces, Zug Island, to power plant of Detroit Edison Co., at Delray, on other side of Rouge River, about 2600 ft., for blast furnace gas supply to power plant noted. Line will cross Rouge River, about 200 ft. wide, on new bridge to be built for this purpose, approximately 150 ft. above high water line. Contracting company will fabricate pipe at its shops at Owosso, Mich.

...BOSTON...

... Ohio stove plant hiring molders from New England.

... Foundries expect more active business.

BOSTON, Aug. 11.—There was an increase in pig iron buying the past week. The Mystic Iron Works sold a 1000-ton lot of No. 1X iron for shipment within a fortnight. Sentiment among foundrymen is optimistic, for indications are for a larger demand for castings following Labor Day. The Florence-Wehrle Stove Co., Newark, Ohio, last week took a group of 20 stove molders from Taunton, Mass., and plans to take 30 more men from the East. The men were

given travel and incidental expense money, and guaranteed work until the first of the year.

While few round tonnages of cast iron pipe are coming into the market, the Everett, Mass., plant of the Warren Foundry & Pipe Corp. is very busy on small private business. With few exceptions, fabricating structural steel shops are well employed, a majority on small jobs on which there is profit. The general run of reinforcing steel bar orders is small, but fairly numerous. Warehouses are having a much better summer than in 1935.

..CAST IRON PIPE..

Smithfield, R. I., will close bids at 2 p.m., Aug. 13 for material for a water system to cost \$186,000.

Springfield, Mass., has awarded 1000 ft. of 6-in., 6000 ft. of 8-in. and 1000 ft. of 16-in. pipe to the United States Pipe & Foundry Co.

Chicago will open bids Aug. 18 on 3000 tons of 6 to 12-in. pipe.

Los Angeles Department of Water Power has awarded 3570 tons of pipe; 2800 to United States Pipe & Foundry Co., 400 to American Cast Iron Pipe Co., and 370 to National Cast Iron Pipe Co.

Union Gap, Wash., has opened bids on 325 tons of 4, 6 and 8-in.

Albuquerque, N. M., Indian Department, has taken bids on 255 tons for a project at Ignacio, Colo.

Toledo, Ohio, has let 400 tons, 6 to 24-in. pipe to James B. Clow & Sons.

Fremont, Ind., plans pipe lines for water system. Fund of \$54,545 has been arranged through Federal aid for this and other waterworks installation, including pumping machinery and accessories, and elevated steel tank and tower. Charles H. Hurd, Architects' & Builders' Building, Indianapolis, is consulting engineer.

Blue Mountain, Miss., takes bids soon for pipe lines for water system and other waterworks installation. Fund of \$46,000 has been secured through Federal aid.

Yonkers, N. Y., takes bids soon for quantity of 8 and 6-in., for number of new lines for water system in different streets. Cost over \$35,000.

Kennedy, Minn., plans pipe lines for water system, including trunk main from source of supply at Lake Wold. Estimates of cost will be made soon. Financing will be arranged through Federal aid.

Fuquay Springs, N. C., plans pipe lines for water supply. Also other waterworks installation. Fund of \$51,450 has been secured through Federal aid for this and sewer system.

Richardton, N. D., plans pipe lines for water system. Also other waterworks installation. Fund of \$36,300 will be arranged through Federal aid.

Montgomery, Ala., plans about 20 miles, various sizes, for extensions in water system; also 1,000,000-gal. capacity elevated steel tank in Capital Heights district and other waterworks installation. Cost about \$330,000, of which close to \$100,000 will

be secured through Federal aid. Board of City Commissioners in charge.

Kalispell, Mont., takes bids soon for about 6000 lin. ft., 6-in., and 600 lin. ft., 8-in., for water system. A. L. Saunders is city engineer.

Bagley, Minn., plans about 3370 ft., for water system. Financing will be arranged through Federal aid.

General Purchasing Officer, Panama Canal, Washington, closes bids Aug. 24 for 117,360 ft., 1/2 to 8-in., including quantity cast iron pipe fittings (Schedule 3172).

Board of Baltimore County Commissioners, Towson, Md., Samuel A. Green, chief engineer, plans pipe lines for water service in number of highways in different parts of county. Cost about \$1,000,000 including number of sewer lines in various county areas.

Easton, Pa., takes bids soon for quantity for water system in Lafayette Street. Cost about \$18,800. C. A. Reese is city engineer.

Farmville, N. C., plans pipe lines for water system and other waterworks installation. Fund of \$118,100 is being arranged through Federal aid for this and sewer lines.



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Lift Truck for loads
up to 1,000 lbs.



MULTI-STROKE
Hand Lift Trucks
made in capacities
up to 20,000 lbs.



The "REDSTREAK"
Single Stroke Hand
Lift Truck, 3,500 lbs.
capacity.



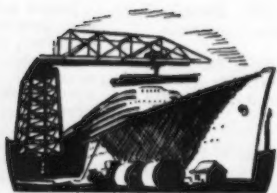






THE lifting and hauling of materials, though it adds nothing to the value of a product, is an essential operation in every industrial plant. Materials handling cannot be eliminated but it can be done more swiftly, safely and economically—by means of a Yale Hand Lift Truck and Skid Platform System. Yale Trucks are distinguished for their speed, their ease of operation, their durability and long life. There are models to fit every requirement and the list of Yale users reads like a blue book of American industry.

THE YALE & TOWNE MFG. CO.
Philadelphia Division Philadelphia, Pa., U. S. A.



.. PHILADELPHIA ..

... *New orders ease somewhat but mill backlogs are heavy.*

o o o

... *Scrap prices again advance sharply.*

o o o

... *Shipbuilding revival promising for fall business.*

PHILADELPHIA, Aug. 11.—The larger mills report a steady flow of new orders and specifications against contracts, and, although the volume in some instances may be slightly below that of July, in others it is holding at about last month's rate. In any case, the situation with regard to mill deliveries is not easing; in fact, deliveries are further extend-

ed on sheets, structural shapes and bars.

The pressure at the mills to get out tonnage is reflected in the scrap market, which has undergone another sharp advance. No. 1 heavy melting steel is quoted at \$14 delivered, which is 50c. to \$1 a ton above last week's quotations.

One of the promising prospects for fall demand for steel lies in

the shipbuilding industry both in specifications for ships already under contract and in new work that is under consideration. The Calmar Steamship Co., subsidiary of Bethlehem Steel Co., contemplates the building of six new freighters to cost about \$3,000,000 each, which, when completed, will be placed in weekly service between Atlantic and Pacific ports. The Black Diamond Line has announced that it will build three ships for the New York-Antwerp-Rotterdam trade. A decision will be reached soon on a sister ship of the Manhattan and Washington of the United States Lines. Also, a great deal of Navy work is in prospect for private yards, including six destroyers and three submarines, with an equal number to be built in Navy yards.

Pig Iron

Orders for pig iron are usually in lots of one or two carloads, but consumers' stocks are believed to be low and an improvement in buying is expected in the near future. The higher cost of cast scrap may have a tendency to influence foundries to use a little more pig iron than formerly.

Plates and Shapes

Some mills are now able to ship plates within two weeks from receipt of order, while others are booked farther ahead than this. Large specifications for plates for ship work now under contract are expected within a month. The demand for structural shapes from fabricating shops against contracts placed prior to the July 31 deadline is very strong and the mills are being taxed to meet delivery promises.

Sheets

The mill situation on galvanized sheets is disconcerting to consumers and jobbers, who are unable to get the fairly prompt deliveries that were possible up to a few weeks ago. Some mills are quoting six to eight weeks' delivery.

Imports

The following iron and steel imports were received here last week: 1795 tons of pig iron from British India and 18 tons of cold-drawn wire from Sweden.

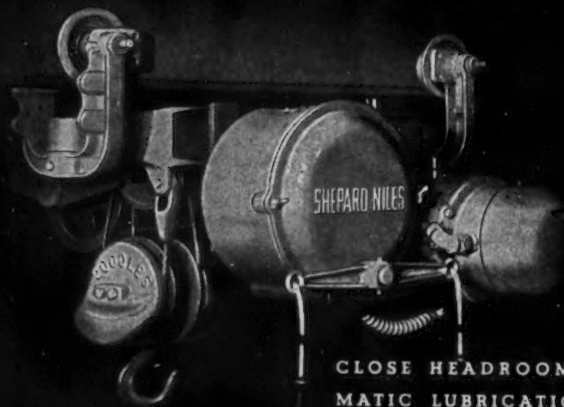
American Steel Foundries has restored preferred dividend payments to the prescribed rate of \$1.75 a share. This action ends a period of three and one-half years in which preferred dividends were paid at the reduced quarterly rate of 50c., the last full \$1.75 disbursement having been made in December, 1932.

SHEPARD NILES

DIRECT WORM DRIVE

Electric Hoists

1/4 TO 6 TONS CAPACITY



CLOSE HEADROOM, AUTOMATIC LUBRICATION, ROPE OR PUSH BUTTON CONTROL, ANTI-FRICTION BEARINGS

WRITE FOR BULLETIN

SHEPARD NILES CRANE & HOIST CORP.

384 Schuyler Ave., Montour Falls, N. Y. • Export: 111 E'dway, N. Y. C.

MOST COMPREHENSIVE LINE OF CRANES & HOISTS



... Drought affects sales of fencing and roofing.

o o o

... Pig iron melt improved.

ST. LOUIS, Aug. 11.—Business continues good in most lines of finished steel. The exceptions are fencing and roofing, the slump in these items being due to the drought. Structural fabricators are busy, principally with small jobs. The larger awards of the week were 500 tons of shapes to the Mississippi Valley Structural Steel Co. and 500 tons of reinforcing bars to the Laclede Steel Co. for a viaduct over the Missouri Pacific tracks here.

Sales of pig iron are light, but specifications against contracts are very satisfactory, shipments being well maintained. The melt in the district has been stepped up some, following a cessation of the extreme heat which prevailed during July. The stove industry at Belleville is going at an improved rate. Jobbing foundries here are busy.

Ingot production is at 70 per cent of capacity.



... Pig iron business is steady.

o o o

... Steel mill operations unchanged.

BUFFALO, Aug. 11.—In spite of a slowing down in the automotive industry and quietness in the agricultural implement business, pig iron ordering is going on steadily with little decrease in volume. Most foundries are keeping a little ahead of requirements with 50, 100 and 150-ton purchases. Prices are firm.

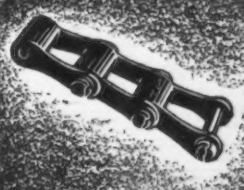
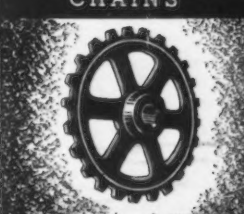
Operations of steel mills remain steady with open-hearth activity

about the same as last week. Bethlehem's Lackawanna plant is running 22 open hearths with a possibility of 23 total before the end of the week. Republic has six and Wickwire-Spencer Corp., two active.

A Buffalo concern will fabricate 800 tons of reinforcing bars for the Buffalo sewer project in connection with the disposal plant. Bids have been taken on 220 tons of reinforcing bars for the con-

struction of a clearwater basin on the disposal plant job.

Allegheny Steel Co., Brackenridge, Pa., reports for the first six months of 1936 a total net income of \$830,778, equivalent to \$1.35 per share on common stock outstanding. In the first quarter, 45c. per share was earned and in the second quarter 90c. per share. This compares with 19c. per share for the second period in 1935 or almost five times the earnings for the same quarter a year ago. An extra dividend of 15c. per share on the common was declared.

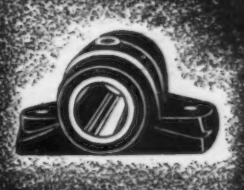
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SPROCKETS

POWER

TRANSMISSION

EQUIPMENT




BEARINGS

TAKE-UPS

CONFORMING to the highest manufacturing standards, Bartlett-Snow chains, sprockets and accessory equipment for elevators and conveyors contribute in large measure to the satisfactory operation of equipment in which they are a part.

Popular types and detachable and pintle chains... steel chains for heavy drives, and others, designed for special applications are included in the complete line.

Send for a copy of Bulletin No. 74. 142 pages describes all types of Bartlett-Snow chain and chain attachments, sprockets, buckets, shafting, collars, takeups, gearing, gives prices, weights, etc. Write for copy.

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BARTLETT-SNOW
Chains and Sprockets
CHAIN-CHAIN ATTACHMENTS-SPROCKET WHEELS
BUCKETS-BEARINGS-TAKEUPS-GEARING-COLLARS

...CINCINNATI...

...Sheet production at 90 per cent.

o o o

...Heavy August demand astonishes trade.

CINCINNATI, Aug. 11.—The fact that the changeover in automobile models is being made without any marked reduction in

output is responsible in part for the continued high rate of sheet production in this district, which this week is at 90 per cent. There has been a steady demand also from other sources. The heavy August bookings have brought comments of astonishment from the trade. Some railroad ordering and advance contracting has been reported, but what effect anticipatory contracting may have on business the rest of the quarter is not indicated.

Steel making is unchanged. Twenty-six out of 34 open hearths are still in operation.

Cincinnati pig iron users will profit by rearrangement of basing point schedules, but in Hamilton, Dayton and other points north,

prices are unchanged. Under the new schedules No. 2 Northern iron delivered in Cincinnati is quotable at \$19.82, down .6607c. Southern furnaces will continue to maintain the 38c. differential. Demand is holding to about 1000 tons a week and foundries show no change from last week.

The change in price is brought about by the fact that Cincinnati is now strictly on a Birmingham base instead of a Hamilton base. The Birmingham base for No. 2 foundry iron has been increased from \$15.50 to \$15.88 by the addition of the 38c. differential that has been applied on shipments to points north of the Ohio River. The 38c. differential is provided for as a deduction from the base delivered price in the North on foundry iron with phosphorus .70 per cent or higher. The actual freight rate from Birmingham to Cincinnati and other Northern points applies when by such method of figuring the delivered price is lower than the price quoted by Northern furnaces; when it is higher the Southern furnaces, it is understood, will meet Northern quotations, subject to the 38c. deduction for iron of high phosphorus content.

ABRASIVE Motorized DUST EXHAUSTER

STATE LAW requirements have been met by these Dust Exhausters wherever they have been tried.

In localities where the use of Dust Collectors is not mandatory by law, these Abrasive Motorized Exhausters are nevertheless very desirable because:—

They remove injurious dust from the operating space.

Keep machines and surroundings cleaner.

Help circulate the air.

Can be used on all types of machines such as Grinders, Snaggers, Gear Hobbers, Screw Machines, Textile and Wood Working Machinery.

Hundreds in use. Write for circular.

**ABRASIVE
MACHINE TOOL CO.**

Dexter Road, East Providence, R. I.



Abrasive Motorized Exhauster with Separator

..TRADE NOTES..

Vonnegut Moulder Corp., 1815 Madison Avenue, Indianapolis, has acquired the exclusive manufacturing and sales rights, including patents and all manufacturing facilities, for Marschke heavy-duty electric grinders and buffers formerly manufactured by Marschke Mfg. Co., Indianapolis.

Le Roy J. Wheeler, Houston, Tex., formerly manager of the Singer Iron & Steel Co., dealer in scrap iron and steel, which is being liquidated, will operate a similar business under the name of L. J. Wheeler, Inc., M. & M. Building, Houston.

The Eclipse Counterbore Co., Detroit, has appointed the Brammer Machine & Tool Service Co., Tulsa, Okla., as its exclusive representative in Oklahoma, Kansas and Texas.

Corbett Corp., Sawyer and Winter Streets, Houston, Tex., has been appointed Texas sale representative by the Globe Steel Tubes Co., Milwaukee.

General Meters & Controls Co., formerly the General Instruments & Controls Company, 205 West Wacker Drive, Chicago, has been appointed direct factory representative by the Fisher Governor Co., Marshalltown, Iowa, manufacturer of automatic control specialties.



...NON-FERROUS...

... Position of copper strengthened by active export demand.

... Lead buying holds to above-average volume.

... Firm undertone in zinc, but tin stagnates.

NEW YORK, Aug. 11.—The feature of the copper market has been the excellent demand for export material. Business continued brisk today, and the price held unchanged at from 9.62½c. to 9.65c. a lb., c.i.f., European base ports. As recently announced, European war preparations are providing the basis upon

which so much export copper is being sold. Naturally, there has not been a similar stimulation of domestic inquiry, since July sales were exceptionally large. The current month so far has accounted for 3126 tons. It is not unlikely, however, that the domestic quotation will automatically be forced higher than its current level of

9.75c. a lb., Connecticut, provided the export price maintains its present trend. Releases to the consuming trade indicate that home consumption is large.

Lead

Sustained active buying of lead has carried through its sixth consecutive week. At the moment, while some abatement has occurred, there is no reason to believe that volume will not hold up to normal or even above normal levels this week also. The inquiry reported is strongly diversified as to consuming outlets, and a feature has been the conspicuousness of cable manufacturers. July sales were the biggest for any month since 1929. Shipments for the same period have been estimated at between 37,000 and 39,000 tons. August will be a heavier month in this respect.

Zinc

The reduction in prime Western stocks during July was 1665 tons, the 17th successive decrease in these supplies in as many months. For all grades of zinc, stocks at the month's close showed a rise of 3662 tons. Shipments of all grades increased 237 tons to 41,891 tons, and production gained 606 tons to 45,553 tons. Properly analysed, the statistics, especially with regard to prime Western grade, was wholesome. This fact has been borne out by subsequent developments in the weekly market, where in the period just ended orders for prime Western zinc aggregated 5355 tons, shipments reached 6040 tons, and unfilled orders dropped to 41,042 tons.

Tin

Business among domestic interests is very dull, and, while the price today for spot Straits metal at New York of 43.25c. a lb., is ¼c. higher than a week ago, the rise has not been due to an increase in demand. Local sellers, in fact, appear to be having difficulty in disposing of occasional five-ton lots. On the other hand, quite a number of the trade's regular customers continue to ask that commitments for prompt or near-by shipment be postponed in order to obtain advantage of existing discounts. Another unfavorable factor has been the estimated curtailment in tin plate requirements by vegetable and fruit packers due to drought conditions. Also, the fact that no additional news has come out regarding renewal of international restrictions serves to restrain trading to some extent. If it is true, as there is indication to believe, that most large users of tin are well covered against their needs for three or four months, then the market's current apathy is understandable.

The Week's Prices. Cents Per Pound for Early Delivery

	Aug. 5	Aug. 6	Aug. 7	Aug. 8	Aug. 10	Aug. 11
Electrolytic copper, Conn.*	9.75	9.75	9.75	9.75	9.75	9.75
Lake copper, N. Y.	9.87½	9.87½	9.87½	9.87½	9.87½	9.87½
Straits tin, Spot, New York	42.75	42.75	42.37½		42.62½	43.25
Zinc, East St. Louis	4.80	4.80	4.80	4.80	4.80	4.80
Zinc, New York†	5.17½	5.17½	5.17½	5.17½	5.17½	5.17½
Lead, St. Louis	4.45	4.45	4.45	4.45	4.45	4.45
Lead, New York	4.60	4.60	4.60	4.60	4.60	4.60

*Delivered Connecticut Valley; price ¼c. lower delivered in New York.

†Includes emergency freight charge.

Aluminum, virgin 99 per cent plus, 19.00c.-21.00c. a lb. delivered.

Aluminum, No. 12 remelt No. 2 standard, in carloads, 17.00c. lb., delivered.

Nickel, electrolytic, 35c. to 36c. a lb. base refinery, in lots of 2 tons or more.

Antimony, Asiatic, 12.50c. a lb., New York.

Quicksilver, \$74.00 to \$75.00 per flask of 76 lb.

Brass ingots, commercial 85-5-5-5, 9.25c. a lb., delivered; in Middle West ¼c. a lb. is added on orders for less than 40,000 lb.

From New York Warehouse

Delivered Prices, Base per Lb.

Tin, Straits pig	44.00c. to 45.00c.
Tin, bar	46.00c. to 47.00c.
Copper, Lake	10.75c. to 11.75c.
Copper, electrolytic	10.75c. to 11.75c.
Copper, castings	10.50c. to 11.50c.
*Copper sheets, hot-rolled	17.25c.
*High brass sheets	15.37½c.
*Seamless brass tubes	17.62½c.
*Seamless copper tubes	17.75c.
*Brass rods	13.37½c.
Zinc, slabs	5.75c. to 6.75c.
Zinc, sheets (No. 9), casks, 1200 lb. and over	10.25c.
Lead, American pig	5.10c. to 6.10c.
Lead, bar	6.10c. to 7.10c.
Lead, Sheets, cut	8.25c.
Antimony, Asiatic	13.00c. to 14.00c.
Alum., virgin, 99 per cent plus	23.30c.
Alum., No. 1 for remelting, 98 to 99 per cent	18.50c. to 20.00c.
Solder, ½ and ⅓	28.50c. to 29.50c.
Babbitt metal, commercial grades	25.00c. to 60.00c.

*These prices are also for delivery from Chicago and Cleveland warehouses.

From Cleveland Warehouse

Delivered Prices Per Lb.

Tin, Straits pig	45.00c.
Tin, bar	47.00c.

Copper, Lake	10.50c. to 10.75c.
Copper, electrolytic	10.50c. to 10.75c.
Copper, castings	10.25c. to 10.50c.
Zinc, slabs	6.50c. to 6.75c.
Lead, American pig	5.20c. to 6.50c.
Lead, bar	8.50c.
Antimony, Asiatic	15.00c.
Babbitt metal, medium grade	19.00c.
Babbitt metal, high grade	49.00c.
Solder, ½ and ⅓	24.50c.

Old Metals, Per Lb., New York

Buying prices are paid by dealers for miscellaneous lots from smaller accumulators, and selling prices are those charged to consumers after the metal has been prepared for their uses. (All prices are nominal.)

	Dealers' Buying Prices	Dealers' Selling Prices
Copper, hvy. crucible	7.50c.	8.25c.
Copper, hvy. and wire	7.37½c.	7.87½c.
Copper, light and bottoms	6.37½c.	6.87½c.
Brass, heavy	4.25c.	4.87½c.
Brass, light	3.50c.	4.25c.
Hvy. machine composition	6.25c.	6.75c.
No. 1 yel. brass turnings	5.25c.	5.75c.
No. 1 red brass or compos. turnings	5.37½c.	6.37½c.
Lead, heavy	3.62½c.	4.00c.
Sheet aluminum	13.25c.	14.75c.
Zinc	2.50c.	2.87½c.
Cast aluminum	12.12½c.	13.25c.

SPRINGS

ALL TYPES - ALL SIZES
ALL MATERIALS
Send samples or blueprints for quotations

**MUEHLHAUSEN
 SPRING COMPANY**
 LOGANSPORT, INDIANA



FABRICATED STEEL

... Lettings in large volume at 30,215 tons as against 15,000 tons a week ago.

o o o

... New projects also increase to 24,915 compared with 10,615 tons last week.

o o o

... Plate awards call for only 555 tons, with new projects in large volume.

NORTH ATLANTIC STATES

Boston, 125 tons, garage and packing plant, to New England Structural Co.

New York, 1725 tons, 17-story apartment building, 72nd Street and Madison Avenue, to Harris Structural Steel Co.

New York, 810 tons, Shervier Hospital, 227th Street, to Harris Structural Steel Co.

Brooklyn, 340 tons, substructure, Marine Parkway bridge, to Gifford-Wood Co.

Brooklyn, 150 tons, Sprague Terminal building, to Harris Structural Steel Co.

Utica, N. Y., 250 tons, Commercial Travelers building, to Utica Structural Steel Co., Inc.

Kendaia, N. Y., 195 tons, railroad crossing elimination for Lehigh Valley, to Bethlehem Steel Co.

Carlton, N. Y., 435 tons, State bridge No. 3, to the Fort Pitt Bridge Co.

Jersey City, N. J., 445 tons, bleachers for recreation center, to American Bridge Co.

Paterson, N. J., 225 tons, highway bridge over the Erie railroad, to American Bridge Co.

Berks County, Pa., 165 tons, State highway bridge, to Shoemaker Bridge Co., Pottstown, Pa.

Baltimore, 230 tons, building for Crown Cork & Seal Co., to Dietrich Brothers, Inc.

Sagertown, Pa., 780 tons, State highway bridge, to Bethlehem Steel Co.

Marcus Hook, Pa., 210 tons, dock for Sinclair Refining Co., to Belmont Iron Works.

Washington, D. C., 440 tons, Translux-Theater Building, to the Harris Structural Steel Co.

SOUTH AND SOUTHWEST

Port Arthur, Tex., 10,000 tons, bridge over Neches River; 6000 tons truss spans to Fort Pitt Bridge Co., 4,000 tons for approaches to Jones & Laughlin Steel Corp. All steel to be furnished by Jones & Laughlin Steel Corp. Fabrication divided.

Pulaski County, Ark., 290 tons, bridge, to Pittsburgh-Des Moines Steel Co.

Panola County, Miss., 145 tons, bridge, to Vincennes Steel Co., Vincennes, Ind.

Adams-Jefferson Counties, Miss., 170 tons, bridge, to Stupp Brothers Bridge & Iron Co.

CENTRAL STATES

Cleveland, 440 tons, building for the Plain Dealer Publishing Co., to the American Bridge Co.

Ironton, Ohio, 535 tons, State highway bridge, to the Fort Pitt Bridge Co.

Rossford, Ohio, 1075 tons, building for Libbey-Owens-Ford Glass Co., to Bethlehem Steel Co.

New Miami, Ohio, 150 tons, Butler County bridge, to Pan-American Bridge Co., New Castle, Ind.

Fort Wayne, Ind., 435 tons, State bridge No. 1407, to Bethlehem Steel Co.

Chicago, 140 tons, Trumbull Park Housing project, to Vierling Steel Co.

Chicago, 2275 tons, South Ashland Avenue bridge, to Mount Vernon Bridge Co., previously reported to unnamed bidder.

Chicago, 140 tons, U. S. Gypsum Co., warehouse addition, to Wendnagel & Co., Chicago.

Chicago, 620 tons, lock and guide walls for the sanitary district of Chicago, to Bethlehem Steel Co.

Cicero, Ill., 230 tons, building for the Chicago Vitreous Enamel Products Co., to Joseph T. Ryerson & Son.

Wanda, Ill., 260 tons, grade crossing elimination, to Wisconsin Bridge & Iron Co.

Edwardsville, Ill., 370 tons, State highway bridge, to St. Louis Structural Steel Co.

Venice, Ill., 1200 tons, State highway bridge, to the Illinois Structural Bridge Co.

Monsanto, Ill., 310 tons, boiler house, Monsanto Chemical Co., to Stupp Brothers Bridge & Iron Co.

Cedarsburg, Mich., 125 tons, highway bridge, to R. C. Mahon Co., Detroit.

Saugatuck, Mich., 810 tons, bridge, to American Bridge Co.

Milwaukee, 1635 tons, plant addition for Schlitz Brewing Co., to Worden-Allen Co.

Wisconsin, 285 tons, Chicago-Northwestern Railroad, Pt. Washington Road bridge, to the Milwaukee Bridge Co.

Kenmore, Mo., 330 tons, highway bridge, to Bethlehem Steel Co.

St. Louis, 500 tons, Kingshighway viaduct, over Missouri Pacific tracks, to Mississippi Valley Structural Steel Co.

Pinckneyville, Mo., 200 tons, highway bridge, to the Missouri Valley Bridge & Iron Co.

Bellevue, Iowa, 2575 tons, dam No. 12, to Treadwell Engineering Co.

WESTERN STATES

Los Angeles, 280 tons, Overland Avenue Bridge, to Minneapolis-Moline Power Implement Co.

Woodland, Cal., 850 tons, Spreckles Sugar Co. factory building No. 3, to Herrick Iron Works.

San Francisco, 375 tons, building, General Brewery Co., to Western Iron Works.

Los Angeles, 849 tons, State bridges on Pacific Avenue and Verdugo Wash, to Consolidated Steel Corp.

Puyallup, Wash., 165 tons, State bridge, to Star Iron Works.

Los Angeles, 275 tons, building at Emerson junior high school, to Bethlehem Steel Corp.

Burbank, Cal., 125 tons, distillery building, to Western Iron & Metal Co.

State of Colo., 150 tons, State highway bridges in three counties, to various bidders.

Ontario, Ore., 226 tons, Black Canyon canal supports, to an unnamed bidder.

NEW STRUCTURAL STEEL PROJECTS

NORTH ATLANTIC STATES

New York, 4700 tons, section 8 of the Sixth Avenue Subway.

New York, 275 tons, Greyhound Bus Terminal.

West Point, N. Y., 2000 tons, Cadet Armory, United States Military Academy.

Ardley-on-the-Hudson, N. Y., 300 tons, apartment house.

Smithtown, N. Y., 250 tons, grade crossing elimination, Long Island Railroad.

Pennsylvania, various locations, 400 tons, State highway bridges.

Washington, 6849 tons shapes and 345 high-tensile steel, floating drydock for Pearl Harbor, T. H., bids Sept. 30.

CENTRAL STATES

Ashtabula County, Ohio, 400 tons, bridge, bids due Aug. 18.

Wood County, Ohio, 600 tons, highway bridge, bids due Aug. 18.

Gary, Ind., 200 tons, post office, Hickey Construction Co., low on general contract.

Chicago, 300 tons, addition to plant of Goodman Mfg. Co.

Chicago, 250 tons, heating plant for the Jane Addams housing project.

Chicago, 1000 tons, addition to Fisk Street power house of Commonwealth Edison Co.

Chicago, 100 tons, Warner Brothers Theatre.

Lake County, Minn., 150 tons, high school building.

Bellevue, Iowa, 4600 tons, dam and locks on Mississippi River. Warner Construction Co., low bidder on general contract.

Springfield, Ill., 1200 tons, plant addition for Allis-Chalmers Mfg. Co.

WESTERN STATES

Fort Peck, Mont., 100 tons, railroad bridge, bids Aug. 25.

Dover, Idaho, 165 tons, State undercrossing, bids opened.

San Francisco, 182 tons, material for Treasury Department, Proposal No. 816, bids opened.

Los Angeles, 250 tons approximately, gate hoists for U. S. Engineers; Consolidated Steel Corp. is low bidder.

Los Angeles, 300 tons, three bridges, United States Engineers office, bids Aug. 19.

FABRICATED PLATES

AWARDS

Cleveland, 225 tons, Gulf Refining Co., three tanks, to Youngstown Boiler & Tank Co.

Los Angeles, 200 tons, 18-in. pipe for Department of Water & Power, to Consolidated Steel Corp.

San Bernardino, Cal., 130 tons, material for City water system, to Western Pipe & Steel Co.

NEW PROJECTS

Los Angeles, 1000 tons, 24 and 36-in. pipe line, specification X36, bids Aug. 17.

Washington, 22,636 tons, floating drydock for Pearl Harbor, T. H., bids Sept. 30.

San Francisco, 5000 tons, second unit of Crystal Springs 60-in. pipe line, bids within 30 days.

SHEET PILING

AWARDS

Sylvan Point, N. Y., 273 tons, improvements on the barge canal, to the Jones & Laughlin Steel Corp.

Lakeworth, Fla., 243 tons, for the Lakeworth bridge, to the Jones & Laughlin Steel Corp.

Quincy, Ill., approximately 2183 tons, dam No. 21, Mississippi River, to the Inland Steel Co.

NEW PROJECTS

Arlight, Cal., 520 tons, breakwater at Point Arquello Coast Guard station, bids rejected as excessive.

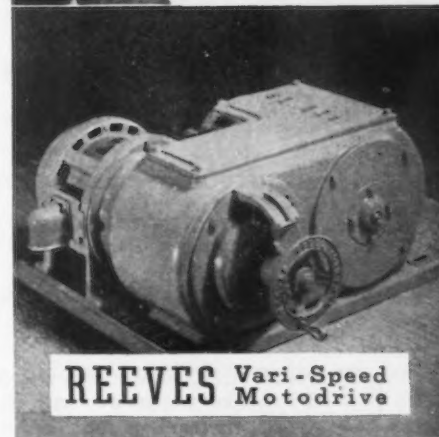
Republic to Expand Tin Plate Facilities

THE Republic Steel Corp., Cleveland, has appropriated \$3,000,000 for the construction of additions to the strip tin plate mill at its Niles, Ohio, plant. The expansion will include erection of new buildings and improvements in the present structure besides new four-high cold reducing stands, pickling, annealing, and tinning equipment. Completion of this installation will approximately treble the capacity of cold-reduced tin plate of the company.

The United Engineering & Foundry Co., Pittsburgh, will furnish a four-stand tandem mill, to cost about \$1,000,000, for this installation. Production of equipment will be started immediately and will be completed by the end of the year. The new mill will supplement the cold-rolled tin plate capacity of the three reversing mills at Republic's Warren, Ohio, plant.



HAVE YOU
HEARD ABOUT
THE NEW
REEVES SPEED
CONTROL UNIT?



Combines in one compact, self-contained enclosure — ANY standard constant speed motor, a REEVES speed-varying mechanism and, where required, speed reduction gears.

● PRODUCTION executives are praising this attractive new REEVES combination variable speed drive. It extends all the many advantages of accurate, wide-range r. p. m. control to more manufacturing processes.

Installed easily where, due to space limitations, the mounting of a driving motor, variable speed mechanism and reduction gears as separate units with their driving connections would be difficult. In different combinations of sizes, speed variation ratios and reduction gears, output speeds from 1.35 to 3480 r. p. m. are obtainable.

To obtain any desired speed on any machine driven by this unit, operator merely turns handwheel. Effects speed changes smoothly, quickly, accurately while driving. Releases full capacities of men and machines. Eliminates lost motion and inaccuracies caused by speeds that are too fast or too slow. Available in horizontal and vertical designs—each in five sizes taking any standard constant speed foot type ball-bearing motor from 1/4 to 10 horse power. Based on time-tested principles of speed variation used by REEVES in the famous Variable Speed Transmission and Vari-Speed Motor Pulley.



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Address.....



IRON AND STEEL SCRAP

... Scrap composite rises to \$14.92—highest since Feb. 18, 1930.

... Available scrap scarce due to reluctance to sell in rising market.

... \$16 market reached at Pittsburgh with higher prices anticipated.

CONTINUED heavy purchases by brokers endeavoring to work themselves out of a short position, together with mill purchases, were reflected in advances of No. 1 steel at Pittsburgh, Chicago and Philadelphia, which correspondingly boosted the composite scrap price to \$14.92, the highest mark since Feb. 18, 1930. In Pittsburgh, No. 1 has sold at \$16, although additional bids at this price have not brought out much scrap, since the principal sources of supply, small yard dealers, seem to be holding out for higher prices.

Pittsburgh

The market in this district is strong. Within the past week dealers have been paying \$15.75 to cover on No. 1 steel. Brokers are reluctant to make any sales even at \$16, since they feel the market is much stronger than this figure. However, within the past few days a small tonnage involving approximately one thousand tons was purchased at \$16. Any further sales made around this figure are bound to be in small lots since steel continues to be extremely scarce in the Pittsburgh district. Various reasons are ascribed to this and some brokers who have made a study of the situation feel that heavy tonnages exported during the past few years are exerting their influence on this district. The main source of supply is the small yard dealers who are holding on to their material in anticipation of high prices. The \$16 sale coupled with the fact that dealers are paying \$15.75 to cover makes No. 1 quotable at \$15.50 to \$16.

Chicago

Heavy melting steel has been sold to consumers at over \$15 a gross ton delivered and railroad offerings bring about 50c. a ton above what consumers have paid. Higher prices have freed scrap somewhat but there is still good reason to believe that supplies of the first grades are short. In almost

all instances where buyers have been offered tonnages, brokers who believe that the high has not been reached have cut the amounts sharply.

Cleveland

This market continues firm although it is primarily a dealer's market since there has been no mill buying of scrap during the past week. No. 1 steel is now commanding \$14.50 a ton delivered to consumers, and bundles are also up 50c. Some brokers caught in a short situation are trying to draw out scrap at prices higher than those now quoted, but it is felt that such tactics are not setting the market. Youngstown market is also very strong, but prices have shown a rise of only 25c. during the week as compared to a \$1 rise the week before.

Philadelphia

A strongly advancing market, with steel grades up from 50c. to \$1 a ton, has been brought about by active demand from mills and from brokers who are covering against contracts taken at lower prices. No. 1 steel is quoted at \$13.50 to \$14 against a flat price of \$13 a week ago. A mill sale has been made at \$14. With heavy steel scrap scarce, new hydraulic bundles command the same price as No. 1 steel.

Boston

Prices for all active scrap average 50c. a ton higher. Exporters are now paying \$11.50 a ton delivered for No. 1 steel and a dollar less for No. 2, and have made offers of 25c. a ton more for round tonnages, but there have been no takers. A recent shipment was 1365 tons of old rails to London. Several European countries are negotiating for tonnages, but Japan maintains its lead as a buyer. For Pittsburgh district delivery \$8.30 a ton, f.o.b., is the general price for bundled skeleton, and \$6.75 to \$7 for cotton ties. Early in the past week \$4.90 a ton on cars was paid for short steel turnings, but the market today seems settled at \$4.40. Stripped engine blocks are moving at \$8.50 a ton, f.o.b. The

market generally is more active and stronger than it has been in months.

New York

This market continues its steady march upward. For the most part brokers are still avoiding commitments, but are endeavoring to get into a long position in order to be prepared to take advantage of sales at even higher price levels which are likely to develop over the next two weeks. Practically all prices in the list have advanced either on the basis of small sales or in sympathy with heavy melting steel. Local brokers are entering bids on 2400 net tons of unused structural steel, placed on sale yesterday by the B.M.T. subway. This material will probably bring between \$8.50 and \$9, on the ground. The Seaboard Air Line Railroad sold about 18,000 tons of No. 1 steel last week at an approximate price of \$14, f.a.s.

Buffalo

Several thousand tons of No. 1 and No. 2 steel has been bought by a local mill at \$14 and \$12.50 respectively. Previously this mill had paid \$13 for No. 1 and \$11.50 for No. 2. This action succeeds a transaction within the past three weeks in which another mill paid \$12.25 for a tonnage of No. 2. Sales of No. 1 machinery cast at \$12.50 are noted.

St. Louis

The market for scrap iron is firm. While the mills in the district are buying little, dealers are active purchasers, holding the view that prices will advance later. No. 2 steel has been advanced 25c. by dealers, and it is expected that higher prices will prevail on railroad offerings this week. The principal list before the dealers here is 67 carloads by the Missouri Pacific. The Louisville & Nashville has a list of 6900 tons, but it is believed that Eastern interests will absorb nearly all of this offering.

Cincinnati

Highly competitive bidding on current offerings has strengthened the old materials market despite the lack of mill ordering. Dealers are buying heavily to cover commitments, in some instances waiving profits to obtain coverage. Official schedules have advanced 25c. on all grades to reflect current activity.

Detroit

The market generally is very strong, although some dealers believe that it is now riding pretty close to the top. Dealers are in many instances refusing to sell to brokers at offered prices, feeling that they may realize more profit in another few days. At the same time there is an obvious shortage of scrap at the plants and there will be for at least another 30 days during the shut-down period. There have been some offerings for heavy melting steel at \$13 a ton delivered at the dock, which would indicate a very bullish attitude on the part of brokers, since the Cleveland price at the time the offering was made would represent a loss on the added freight charges.

Iron and Steel Scrap Prices

PITTSBURGH

Per gross ton delivered to consumer:	
No. 1 hvy. mltng. steel.	\$15.50 to \$16.00
No. 2 hvy. mltng. steel.	14.25 to 14.75
No. 2 RR. wrought	15.50 to 16.00
Scrap rails	15.50 to 16.00
Rails, 3 ft. and under.	16.75 to 17.25
Comp. sheet steel	15.50 to 16.00
Hand bundled sheets.	14.50 to 15.00
Hvy. steel axle turn.	14.00 to 14.50
Machine shop turn.	10.50 to 11.00
Short shov. turn.	10.50 to 11.00
Mixed bor. & turn.	10.00 to 10.50
Cast iron borings.	10.50 to 11.00
Cast iron carwheels.	15.00 to 15.50
Hvy. breakable cast.	13.00 to 13.50
No. 1 cast	15.50 to 16.00
RR. knuckles & cplrs.	18.00 to 18.50
Rail coil & leaf springs	18.00 to 18.50
Rolled steel wheels.	18.00 to 18.50
Low phos. billet crops.	18.50 to 19.00
Low phos. sh. bar.	18.00 to 18.50
Low phos. punchings.	18.00 to 18.50
Low phos. plate scrap.	17.75 to 18.25
Steel car axles	16.50 to 17.00

CLEVELAND

Per gross ton delivered to consumer:	
No. 1 hvy. mltng. steel.	\$14.00 to \$14.50
No. 2 hvy. mltng. steel.	13.00 to 13.50
Comp. sheet steel	13.50 to 14.00
Light bund. stampings	9.50 to 10.00
Drop forge flashings.	12.50 to 13.00
Machine shop turn.	8.50 to 9.00
Short shov. turn.	9.00 to 9.50
No. 1 busheling	12.50 to 13.00
Steel axle turnings.	9.50 to 10.00
Low phos. billet crops	17.00 to 17.50
Cast iron borings	9.00 to 9.50
Mixed bor. & turn.	9.00 to 9.50
No. 2 busheling	9.00 to 9.50
No. 1 cast	14.50 to 15.00
Railroad grate bars.	8.00 to 8.50
Stove plate	9.00 to 9.50
Rails under 3 ft.	16.00 to 16.50
Rails for rolling	16.50 to 17.00
Railroad malleable	17.00 to 17.50
Cast iron carwheels.	15.00 to 15.50

PHILADELPHIA

Per gross ton delivered to consumer:	
No. 1 hvy. mltng. steel.	.... \$14.00
No. 2 hvy. mltng. steel.	.... 13.00
Hydraulic bund., new.	.... 14.00
Hydraulic bund., old.	.... 11.00
Steel rails for rolling.	\$15.50 to 16.00
Cast iron carwheels.	15.00 to 15.50
Hvy. breakable cast.	14.50 to 15.00
No. 1 cast	15.00 to 15.50
Stove plate (steel wks.)	.... 11.50
Railroad malleable	.... 16.50
Machine shop turn.	.... 9.00
No. 1 blast furnace.	7.50 to 8.00
Cast borings	7.50 to 8.00
Heavy axle turnings.	11.50 to 12.00
No. 1 low phos. hvy.	16.50 to 17.00
Couplers & knuckles.	16.50 to 17.00
Rolled steel wheels.	16.50 to 17.00
Steel axles	17.00 to 17.50
Shafting	19.50 to 20.00
No. 1 RR. wrought.	14.50 to 15.00
Spec. iron & steel pipe.	12.50 to 13.00
Bundled sheets	12.00 to 12.50
No. 1 forge fire	12.00 to 12.50
Cast borings (chem.)	10.50 to 13.00

CHICAGO

Delivered to Chicago district consumers:	
	Per Gross Ton
Hvy. mltng. steel	\$14.75 to \$15.25
Auto. hvy. mltng. steel.	13.00 to 13.50
Shoveling steel	14.75 to 15.25
Hydraul. comp. sheets.	13.00 to 13.50
Drop forge flashings.	12.50 to 13.00
No. 1 busheling	13.75 to 14.25
Rolled carwheels	16.50 to 17.00
Railroad tires cut	16.50 to 17.00
Railroad leaf springs.	16.00 to 16.50
Axle turnings	13.50 to 14.00
Steel coup. & knuckles	16.50 to 17.00
Coil springs	17.00 to 17.50
Axle turn. (elec.)	14.25 to 14.75
Low phos. punchings.	17.00 to 17.50
Low phos. plates, 12 in. and under	17.00 to 17.50
Cast iron borings	7.50 to 8.00
Short shov. turnings.	7.75 to 8.25
Machine shop turn.	6.75 to 7.25
Rerolling rails	15.75 to 16.25
Steel rails under 3 ft.	17.00 to 17.50
Steel rails under 2 ft.	17.50 to 18.00
Angle bars, steel	17.00 to 17.50
Cast iron carwheels.	15.00 to 15.50
Railroad malleable	17.50 to 18.00
Agric. malleable	14.00 to 14.50

Per Net Ton	
Iron car axles	\$18.50 to \$19.00
Steel car axles	17.00 to 17.50
No. 1 RR. wrought.	13.75 to 14.25
No. 2 RR. wrought.	13.25 to 13.75

No. 2 busheling, old.	\$6.00 to \$6.50
Locomotive tires	12.50 to 13.00
Pipes and flues	8.50 to 9.00
No. 1 machinery cast.	13.50 to 14.00
Clean auto. cast	12.50 to 13.00
No. 1 railroad cast.	12.50 to 13.00
No. 1 agric. cast.	11.00 to 11.50
Stove plate	8.50 to 9.00
Grate bars	9.50 to 10.00
Brake shoes	10.25 to 10.75

BUFFALO

Per gross ton, f.o.b. consumers' plants:	
No. 1 hvy. mltng. steel.	\$14.00 to \$14.50
No. 2 hvy. mltng. steel.	12.50 to 13.00
Scrap rails	12.00 to 12.50
New hy. b'ndled sheets	12.50 to 13.00
Old hydraul. bundles.	12.50 to 13.00
Drop forge flashings.	12.50 to 13.00
No. 1 busheling	12.50 to 13.00
Hvy. axle turnings.	10.50 to 11.00
Machine shop turn.	7.00 to 7.50
Knuckles & couplers.	15.00 to 15.50
Coil & leaf springs.	15.00 to 15.50
Rolled steel wheels.	15.00 to 15.50
Low phos. billet crops.	15.50 to 16.00
Short shov. turnings.	9.00 to 9.50
Mixed bor. & turn.	8.00 to 8.50
Cast iron borings	8.00 to 8.50
No. 2 bushelings.	6.50 to 7.00
Steel car axles	14.50 to 15.00
Iron axles	12.00 to 12.50
No. 1 machinery cast.	13.50 to 14.00
No. 1 cupola cast	13.00 to 13.50
Stove plate	10.50 to 11.00
Steel rails under 3 ft.	15.75 to 16.25
Cast iron carwheels.	11.50 to 12.00
Railroad malleable	15.00 to 15.50
Chemical borings	9.00 to 9.50

BIRMINGHAM

Per gross ton delivered to consumer:	
Hvy. melting steel.	\$11.00 to \$11.50
Scrap steel rails.	11.50 to 12.00
Short shov. turnings.	7.00 to 7.50
Stove plates	8.00 to 8.50
Steel axles	12.00 to 12.50
Iron axles	12.00 to 12.50
No. 1 RR. wrought.	8.50 to 9.00
Rails for rolling	12.50 to 13.00
No. 1 cast	12.00 to 12.50
Tramcar wheels	11.00 to 12.00

ST. LOUIS

Dealers' buying prices per gross ton delivered to consumer:	
Selected hvy. steel.	\$12.75 to \$13.25
No. 1 hvy. melting.	12.25 to 12.75
No. 2 hvy. melting.	10.75 to 11.25
No. 1 locomotive tires.	12.00 to 12.50
Misc. stand-sec. rails.	13.25 to 13.75
Railroad springs	14.00 to 14.50
Bundled sheets	9.50 to 10.00
No. 2 RR. wrought.	12.25 to 12.75
No. 1 busheling	8.50 to 9.00
Cast bor. & turn.	4.00 to 4.50
Rails for rolling	14.00 to 14.50
Machine shop turn.	4.00 to 4.50
Heavy turnings	9.25 to 9.75
Steel car axles	14.00 to 14.50
Iron car axles	15.00 to 16.00
No. 1 RR. wrought.	11.00 to 11.50
Steel rails under 3 ft.	14.25 to 14.75
Steel angle bars	14.00 to 14.50
Cast iron carwheels.	11.75 to 12.25
No. 1 machinery cast.	10.75 to 11.25
Railroad malleable	13.50 to 14.00
No. 1 railroad cast.	11.00 to 11.50
Stove plate	7.50 to 8.00
Agric. malleable	12.50 to 13.00
Grate bars	9.00 to 9.50
Brake shoes	10.00 to 10.50

CINCINNATI

Dealers' buying prices per gross ton:	
No. 1 hvy. mltng. steel.	\$11.25 to \$11.75
No. 2 hvy. mltng. steel.	8.75 to 9.25
Scrap rails for mltng.	11.75 to 12.25
Loose sheet clippings.	6.50 to 7.00
Bundled sheets	8.50 to 9.00
Cast iron borings	4.75 to 5.25
Machine shop turn.	5.50 to 6.00
No. 1 busheling	9.25 to 9.75
No. 2 busheling	5.00 to 5.50
Rails for rolling	12.25 to 12.75
No. 1 locomotive tires.	10.25 to 10.75
Short rails	14.75 to 15.25
Cast iron carwheels	11.75 to 12.25
No. 1 machinery cast.	12.25 to 12.75
No. 1 railroad cast.	11.50 to 12.00
Burnt cast	8.00 to 8.50
Stove plates	8.00 to 8.50
Agric. malleable	10.50 to 11.00
Railroad malleable	12.75 to 13.25

DETROIT

Dealers' buying prices per gross ton:	
No. 1 hvy. mltng. steel.	\$12.00 to \$12.50
No. 2 hvy. mltng. steel.	11.00 to 11.50
Boring and turnings.	7.50 to 8.00
Long turnings	7.25 to 7.75

Short shov. turnings.	\$8.25 to \$8.75
No. 1 machinery cast.	14.50 to 15.00
Automotive cast	14.25 to 14.75
Hydraul. comp. sheets	12.00 to 12.50
Stove plates	8.00 to 8.50
New factory bushel.	11.00 to 11.50
Old No. 2 busheling.	6.50 to 7.00
Sheet clippings	8.75 to 9.25
Flashings	10.75 to 11.25
Low phos. plate scrap	12.00 to 12.50

CANADA

Dealers' buying prices per gross ton:

	Toronto	Mon-treal
Hvy. melting steel.	\$7.50	\$7.00
Rails, scrap	8.50	8.00
Machine shop turn.	4.00	4.00
Boiler plate	7.00	6.00
Hvy. axle turnings.	4.50	4.00
Cast borings	5.00	4.50
Steel borings	4.00	4.00
Wrought pipe	4.00	4.00
Steel axles	8.50	9.00
Axles, wrought iron.	9.00	9.50
No. 1 machinery cast.	11.50	11.00
Stove plate	7.50	7.00
Standard carwheels	11.00	10.50
Malleable	7.00	7.00
Shoveling steel	6.50	6.00
Bushelings	6.00	5.50
Compressed sheets	6.50	6.00

YOUNGSTOWN

Per gross ton delivered to consumer:	
No. 1 hvy. mltng. steel.	\$15.00 to \$15.50
Hydraulic bundles	14.50 to 15.00
Machine shop turn.	10.75 to 11.25

NEW YORK

Dealers' buying prices per gross ton:

No. 1 hvy. mltng. steel.	\$9.75 to \$10.25
No. 2 hvy. mltng. steel.	8.75 to 9.25
Hvy. breakable cast.	10.00 to 10.25
No. 1 machinery cast.	10.25 to 10.75
No. 2 cast	8.75 to 9.25
Stove plate	7.50 to 7.75
Steel car axles	13.50 to 14.00
Shafting	14.50 to 15.00
No. 1 RR. wrought	9.50 to 10.00
No. 1 wrought long.	9.00 to 9.50
Spec. iron & steel pipe	9.00 to 9.50
Forge fire	8.00 to 8.50
Rails for rolling	11.00 to 11.50
Short shov. turnings.	4.50 to 5.00
Machine shop turn.	4.50 to 5.00
Cast borings	5.00 to 6.00
No. 1 blast furnace.	3.50 to 4.00
Cast borings (chem.)	10.00 to 11.00
Unprepar. yard scrap.	5.50 to 6.00

Per gross ton, delivered local foundries:

No. 1 machn. cast.	\$12.50 to \$13.00
No. 1 hvy. cast cupola.	10.00 to 11.00
No. 2 cast	8.50 to 9.00

Add 25c. to 50c. to above quotations to secure North Jersey prices.	
No. 1 hvy. mltng. steel.	\$9.40 to \$9.90
Scrap rails	9.50 to 10.00
No. 2 steel	8.40 to 8.90
Breakable cast	9.25 to 9.50
Machine shop turn.	4.40 to 4.90
Bund. skeleton long.	8.25 to 8.30
Shafting	14.90 to 14.25
Cast bor. chemical	5.50 to 7.00

BOSTON

Dealers' buying prices per gross ton:

No. 1 hvy. mltng. steel.	\$9.40 to \$9.90
Scrap rails	9.50 to 10.00
No. 2 steel	8.40 to 8.90
Breakable cast	9.25 to 9.50
Machine shop turn.	4.40 to 4.90
Bund. skeleton long.	8.25 to 8.30
Shafting	14.90 to 14.25
Cast bor. chemical	5.50 to 7.00

Per gross ton delivered consumers' yards:

Textile cast	\$11.50 to \$12.00
No. 1 machine cast	11.50 to 12.00
Stove plate	9.00

EXPORT

Brokers' buying prices per gross ton:

New York, delivered alongside barges	
No. 1 hvy. mltng. steel.	\$10.50 to \$10.75
No. 2 hvy. mltng. steel.	9.50 to 9.75
No. 2 cast	8.50 to 8.75
Stove plate	7.50 to 7.75
Rails (scrap)	10.50 to 11.00

Boston, on cars at Army Base or Mystic Wharf

No. 1 hvy. mltng. steel.	\$11.50
No. 2 hvy. mltng. steel.	10.50
Rails (scrap)	\$11.50 to 11.75
Stove plate	7.75
Machine shop turn.	5.50

New Orleans, on cars at Stuyvesant Dock

No. 1 hvy. mltng. steel.	\$10.00 to \$10.50
No. 2 hvy. mltng. steel.	9.00 to 9.50

Los Angeles, on cars or trucks at local piers

No. 1 hvy. mltng. steel.	\$10.50 to \$11.00
Compressed bundles	8.50 to 9.00

PRICES ON FINISHED AND SEMI-FINISHED IRON AND STEEL

SEMI-FINISHED STEEL

Billets, Blooms and Slabs

F.o.b. Pittsburgh, Chicago, Gary, Cleveland, Youngstown, Buffalo, Birmingham. Prices at Duluth are \$2 a ton higher, and delivered Detroit \$3 higher.

	Per Gross Ton
Rerolling	\$30.00
Forging quality	37.00

Sheet Bars

F.o.b. Pittsburgh, Chicago, Cleveland, Youngstown, Buffalo, Canton, Sparrows Point, Md.

	Per Gross Ton
Open-hearth or Bessemer.....	\$30.00

Skelp

F.o.b. Pittsburgh, Chicago, Youngstown, Buffalo, Coatesville, Pa., Sparrows Point, Md.

	Per Lb.
Grooved, universal and sheared	1.80c.

Wire Rods

(Nos. 4 and 5)

	Per Gross Ton
F.o.b. Pittsburgh or Cleveland	\$38.00
F.o.b. Chicago, Youngstown or Anderson, Ind.	39.00
F.o.b. Worcester, Mass.	40.00
F.o.b. Birmingham	41.00
F.o.b. San Francisco	47.00
F.o.b. Galveston	44.00

BARS, PLATES, SHAPES

Iron and Steel Bars

Soft Steel

	Base per Lb.
F.o.b. Pittsburgh	1.95c.
F.o.b. Chicago or Gary.....	2.00c.
F.o.b. Duluth	2.10c.
Del'd Detroit	2.10c.
F.o.b. Cleveland	2.00c.
F.o.b. Buffalo	2.05c.
Del'd Philadelphia	2.26c.
Del'd New York	2.30c.
F.o.b. Birmingham	2.10c.
F.o.b. cars dock Gulf ports...	2.35c.
F.o.b. cars Pacific ports.....	2.50c.

Rail Steel

(For merchant trade)

F.o.b. Pittsburgh	1.80c.
F.o.b. Cleveland, Chicago, Gary or Moline, Ill.	1.85c.
F.o.b. Buffalo	1.90c.
F.o.b. Birmingham	1.95c.
F.o.b. cars dock Gulf ports...	2.20c.
F.o.b. cars dock Pacific ports..	2.35c.

Billet Steel Reinforcing

(Straight lengths as quoted by distributors)

F.o.b. Pittsburgh	2.05c.
F.o.b. Buffalo, Cleveland, Youngstown, Chicago, Gary or Birmingham	2.10c.
Del'd Detroit	2.20c.
F.o.b. cars dock Gulf ports...	2.45c.
F.o.b. cars dock Pacific ports..	2.45c.

Rail Steel Reinforcing

(Straight lengths as quoted by distributors)

F.o.b. Pittsburgh	1.90c.
F.o.b. Buffalo, Cleveland, Youngstown, Chicago, Gary or Birmingham	1.95c.
F.o.b. cars dock Gulf ports...	2.30c.
F.o.b. cars dock Pacific ports..	2.30c.

Iron

F.o.b. Chicago	1.80c.
F.o.b. Pittsburgh (refined)....	2.10c.
Delivered New York	2.05c.
Delivered Philadelphia	2.10c.

Cold Finished Bars and Shafting*

	Base per Lb.
F.o.b. Pittsburgh	2.25c.
F.o.b. Cleveland, Chicago and Gary	2.30c.
F.o.b. Buffalo	2.35c.
Del'd Detroit	2.40c.
Del'd eastern Michigan	2.45c.

*In quantities of 10,000 to 19,999 lb.

Plates

Base per Lb.

F.o.b. Pittsburgh	1.90c.
F.o.b. Chicago or Gary.....	1.95c.
Del'd Cleveland	2.095c.
F.o.b. Coatesville or Spar. Pt..	2.00c.
Del'd Philadelphia	2.09c.
Del'd New York	2.19c.
F.o.b. Birmingham	2.05c.
F.o.b. cars dock Gulf ports...	2.30c.
F.o.b. cars dock Pacific ports..	2.45c.
Wrought iron plates. f.o.b. Pittsburgh	3.20c.

Floor Plates

F.o.b. Pittsburgh	3.45c.
F.o.b. Chicago	3.50c.
F.o.b. Coatesville	3.55c.
F.o.b. cars dock Gulf ports...	3.85c.
F.o.b. cars dock Pacific ports..	4.00c.

Structural Shapes

Base per Lb.

F.o.b. Pittsburgh	1.90c.
F.o.b. Chicago	1.95c.
Del'd Cleveland	2.095c.
F.o.b. Buffalo or Bethlehem...	2.00c.
Del'd Philadelphia	2.115c.
Del'd New York	2.1625c.
F.o.b. Birmingham (standard)	2.05c.
F.o.b. cars dock Gulf ports...	2.30c.
F.o.b. cars dock Pacific ports..	2.45c.

Steel Sheet Piling

Base per Lb.

F.o.b. Pittsburgh	2.25c.
F.o.b. Chicago or Buffalo.....	2.35c.
F.o.b. cars dock Gulf or Pacific Coast ports	2.70c.

RAILS AND TRACK SUPPLIES

F.o.b. Mill

Standard rails, heavier than 60 lb. per gross ton.....	\$36.37½
Angle bars, per 100 lb.	2.55

F.o.b. Code Basing Points

Light rails (from billets) per gross ton	\$35.00
Light rails (from rail steel) per gross ton	34.00

Base per 100 Lb.

Spikes	2.60
Tie plates, steel	1.90
Tie plates, Pacific Coast ports..	2.00
Track bolts, to steam railroads..	3.60
Track bolts, to jobbers, all sizes (per 100 counts) 70 per cent off list	

Basing points on light rails are Pittsburgh, Chicago and Birmingham; on spikes and tie plates, Pittsburgh, Chicago, Buffalo, Portsmouth, Ohio, Weirton, W. Va., St. Louis, Kansas City, Minneapolis, Colo., Birmingham and Pacific Coast ports; on tie plates alone, Steelton, Pa.; on spikes alone, Cleveland, Youngstown, Lebanon, Pa., Columbia, Pa., Richmond, Va.

SHEETS, STRIP, TIN PLATE.

TERNE PLATE

Sheets

Hot Rolled

Base per Lb

No. 10, f.o.b. Pittsburgh.....	1.95c.
No. 10, f.o.b. Gary	2.05c.
No. 10, del'd Detroit	2.15c.
No. 10, del'd Philadelphia.....	2.26c.
No. 10, f.o.b. Birmingham.....	2.10c.
No. 10, f.o.b. cars dock Pacific ports	2.50c.

Hot-Rolled Annealed

No. 24, f.o.b. Pittsburgh.....	2.50c.
No. 24, f.o.b. Gary	2.60c.
No. 24, del'd Detroit	2.70c.
No. 24, del'd Philadelphia.....	2.81c.
No. 24, f.o.b. Birmingham.....	2.65c.
No. 24, f.o.b. cars dock Pacific ports	3.15c.
No. 24, wrought iron, Pittsburgh	4.30c.

Heavy Cold-Rolled

No. 10 gage, f.o.b. Pittsburgh...	2.60c.
No. 10 gage, f.o.b. Gary	2.70c.
No. 10 gage, f.o.b. Detroit	2.80c.
No. 10 gage, del'd Philadelphia..	2.91c.
No. 10 gage, f.o.b. Birmingham..	2.75c.
No. 10 gage, f.o.b. cars dock Pacific ports	3.20c.

Light Cold-Rolled

No. 20 gage, f.o.b. Pittsburgh...	3.05c.
No. 20 gage, f.o.b. Gary.....	3.15c.
No. 20 gage, del'd Detroit.....	3.25c.
No. 20 gage, del'd Philadelphia..	3.36c.
No. 20 gage, f.o.b. Birmingham..	3.20c.
No. 20 f.o.b. cars dock Pacific ports	3.60c.

Galvanized Sheets

No. 24 gage, f.o.b. Pittsburgh...	3.20c.
No. 24, f.o.b. Gary	3.30c.
No. 24, del'd Philadelphia.....	3.51c.
No. 24, f.o.b. Birmingham.....	3.35c.
No. 24, f.o.b. cars dock Pacific ports	3.80c.
No. 24, wrought iron, Pittsburgh	4.95c.

Long Ternes

No. 24, unassorted 8-lb. coating f.o.b. Pittsburgh	3.50c.
F.o.b. Gary	3.60c.
F.o.b. cars dock Pacific ports..	4.20c.

Vitreous Enameling Stock

No. 20, f.o.b. Pittsburgh	3.05c.
No. 20, f.o.b. Gary	3.15c.
No. 20, f.o.b. Birmingham.....	3.65c.
No. 20, f.o.b. cars dock Pacific ports	3.65c.

Tin Mill Black Plate

No. 28, f.o.b. Pittsburgh	2.75c.
No. 28, Gary	2.85c.
No. 28, cars dock Pacific ports..	3.35c.

Tin Plate

Base per Box

Standard cokes, f.o.b. Pittsburgh district mill	\$5.25
Standard cokes, f.o.b. Gary.....	5.35
Standard cokes, f.o.b. cars dock Pacific ports	5.90

Terne Plate

(F.o.b. Pittsburgh)

(Per Package, 20 x 28 in.)

8-lb. coating I.C.....	\$10.00
17-lb. coating I.C.....	12.00
20-lb. coating I.C.....	13.00
25-lb. coating I.C.....	14.00
30-lb. coating I.C.....	15.25
40-lb. coating I.C.....	17.50

Hot-Rolled Hoops, Bands, Strips and Flats under ¼ in.

Base per Lb.

All widths up to 24 in., P'gh. 1.95c.	
All widths up to 24 in., Chicago. 2.05c.	
All widths up to 24 in., del'd Detroit	2.15c.
All widths up to 24 in., Birmingham	2.10c.
Cooperage stock, Pittsburgh.....	2.05c.
Cooperage stock, Chicago.....	2.15c.

Cold-Rolled Strips*

Base per Lb.

F.o.b. Pittsburgh	2.60c.
F.o.b. Cleveland	2.60c.
Del'd Chicago	2.895c.
F.o.b. Worcester	2.80c.

* Carbon 0.25 and less.

Cold-Rolled Spring Steel

Pittsburgh and Cleveland Worcester

Carbon 0.25-0.50%	2.60c.	2.80c.
Carbon .51- .75	3.45c.	3.65c.
Carbon .76-1.00	4.95c.	5.15c.
Carbon Over 1.00	6.50c.	6.70c.

Fender Stock

No. 14, Pittsburgh or Cleveland.	2.90c.
No. 14, Worcester	3.30c.
No. 20, Pittsburgh or Cleveland.	3.30c.
No. 20, Worcester	3.70c.

WIRE PRODUCTS

(Carload lots, f.o.b. Pittsburgh and Cleveland.)

To Manufacturing Trade

Per Lb.

Bright wire2.40c.
Spring wire3.05c.

Chicago prices on products sold to the manufacturing trade are \$1 a ton above Pittsburgh or Cleveland. Worcester and Duluth prices are \$2 a ton above, Birmingham \$3 above, and Pacific Coast prices \$9 a ton above Pittsburgh or Cleveland.

To the Trade

Base per Keg

Standard wire nails\$2.10
Smooth coated nails2.10

Base per 100 Lb.

Annealed fence wire\$2.65
Galvanized fence wire3.00
Polished staples2.80
Galvanized staples3.05
Barbed wire, galvanized2.60
Twisted barless wire2.60
Woven wire fence, base column 58
Single loop bale ties, base column 51

Chicago and Anderson, Ind., mill prices are \$1 a ton over Pittsburgh base (on all products except woven wire fence, for which the Chicago price is \$2 above Pittsburgh); Duluth, Minn., mill prices are \$2 a ton over Pittsburgh except for woven wire fence, which is \$3 over Pittsburgh and Birmingham mill prices are \$3 a ton over Pittsburgh.

On wire nails, barbed wire and staples, prices at Houston, Galveston and Corpus Christi, Tex., New Orleans, Lake Charles, La., and Mobile, Ala., are \$6 a ton over Pittsburgh.

On nails, staples and barbed wire, prices of \$6 a ton above Pittsburgh are also quoted at Beaumont and Orange, Tex.

STEEL AND WROUGHT IRON PIPE AND TUBING

Welded Pipe

Base Discounts, f.o.b. Pittsburgh District and Lorain, Ohio, Mills

F.o.b. Pittsburgh only on wrought iron pipe.

Butt Weld

In.	Steel Black Galv.	In.	Wrought Iron Black Galv.
1/2	57 37	1/2	57 37
3/4	60 44 1/2	3/4	60 44 1/2
1	64 55	1	64 55
1 1/4	67 59	1 1/4	67 59
1 1/2	69 61 1/2	1 1/2	69 61 1/2

Lap Weld

2	62	2 1/2	65 1/2
2 1/2	65 1/2	3	67 1/2
3	67 1/2	3 1/2	69 1/2
3 1/2	69 1/2	4	71 1/2
4	71 1/2	4 1/2	73 1/2
4 1/2	73 1/2	5	75 1/2
5	75 1/2	5 1/2	77 1/2
5 1/2	77 1/2	6	79 1/2
6	79 1/2	6 1/2	81 1/2
6 1/2	81 1/2	7	83 1/2
7	83 1/2	7 1/2	85 1/2
7 1/2	85 1/2	8	87 1/2
8	87 1/2	8 1/2	89 1/2
8 1/2	89 1/2	9	91 1/2
9	91 1/2	9 1/2	93 1/2
9 1/2	93 1/2	10	95 1/2
10	95 1/2	10 1/2	97 1/2
10 1/2	97 1/2	11	99 1/2
11	99 1/2	11 1/2	101 1/2
11 1/2	101 1/2	12	103 1/2

Butt Weld, extra strong, plain ends

1/2	55 1/2	1/2	55 1/2
3/4	57 1/2	3/4	57 1/2
1	62 1/2	1	62 1/2
1 1/4	66 1/2	1 1/4	66 1/2
1 1/2	68	1 1/2	68

Lap Weld, extra strong, plain ends

2	60	2 1/2	63 1/2
2 1/2	63 1/2	3	65 1/2
3	65 1/2	3 1/2	67 1/2
3 1/2	67 1/2	4	69 1/2
4	69 1/2	4 1/2	71 1/2
4 1/2	71 1/2	5	73 1/2
5	73 1/2	5 1/2	75 1/2
5 1/2	75 1/2	6	77 1/2
6	77 1/2	6 1/2	79 1/2
6 1/2	79 1/2	7	81 1/2
7	81 1/2	7 1/2	83 1/2
7 1/2	83 1/2	8	85 1/2
8	85 1/2	8 1/2	87 1/2
8 1/2	87 1/2	9	89 1/2
9	89 1/2	9 1/2	91 1/2
9 1/2	91 1/2	10	93 1/2
10	93 1/2	10 1/2	95 1/2
10 1/2	95 1/2	11	97 1/2
11	97 1/2	11 1/2	99 1/2
11 1/2	99 1/2	12	101 1/2

On butt-weld and lap-weld steel pipe jobbers are granted a discount of 5%. On less-than-carload shipments prices are determined by adding 25 and 30% and the carload freight rate to the base card.

Note—Chicago district mills have a base two points less than the above discounts. Chicago delivered base is 2 1/2 points less. Freight is figured from Pittsburgh, Lorain, Ohio, and Chicago district mills, the billing being from the point producing the lowest price to destination.

Boiler Tubes

Seamless Steel Commercial Boiler Tubes and Locomotive Tubes

(Net base prices per 100 ft. f.o.b. Pittsburgh in carload lots)

	Cold Drawn	Hot Rolled
1 in. o.d.	13 B.W.G. \$ 8.60	\$ 7.82
1 1/4 in. o.d.	13 B.W.G. 10.19	9.26
1 1/2 in. o.d.	13 B.W.G. 11.26	10.23
1 3/4 in. o.d.	13 B.W.G. 12.81	11.64
2 in. o.d.	13 B.W.G. 14.35	13.04
2 1/4 in. o.d.	13 B.W.G. 16.00	14.54
2 1/2 in. o.d.	12 B.W.G. 17.61	16.01
2 3/4 in. o.d.	12 B.W.G. 19.29	17.54
3 in. o.d.	12 B.W.G. 20.45	18.59

3 in. o.d.	12 B.W.G.	\$21.45	\$19.50
3 1/2 in. o.d.	10 B.W.G.	41.08	37.35
4 in. o.d.	11 B.W.G.	27.09	24.62
4 1/2 in. o.d.	10 B.W.G.	33.60	30.54
5 in. o.d.	10 B.W.G.	41.08	37.35
5 1/2 in. o.d.	9 B.W.G.	51.56	46.87
6 in. o.d.	7 B.W.G.	79.15	71.90

Extra for less-carload quantities:

25,000 lb. or ft. to 39,999 lb. or ft.	5 %
12,000 lb. or ft. to 24,999 lb. or ft.	12 1/2 %
6,000 lb. or ft. to 11,999 lb. or ft.	25 %
2,000 lb. or ft. to 5,999 lb. or ft.	35 %
Under 2,000 lb. or ft.	50 %

CAST IRON WATER PIPE

Per Net Ton

*6-in. and larger, del'd Chicago \$48.40
6-in. and larger, del'd New York 45.20
*6-in. and larger, Birmingham 40.00
6-in. and larger, f.o.b. dock, San Francisco or Los Angeles.... 48.00
F.o.b. dock, Seattle 48.50
F.o.b. dock, Seattle 51.50
Class "A" and gas pipe, \$3 extra.
4-in. pipe is \$3 a ton above 6-in.

* Prices for lots of less than 200 tons. For 200 tons and over, 6-in. and larger is \$39, Birmingham, and \$47.40, delivered Chicago and 4-in. pipe, \$42, Birmingham, and \$50.40 a ton, delivered Chicago.

BOLTS, NUTS, RIVETS, SET SCREWS

Bolts and Nuts

(F.o.b. Pittsburgh, Cleveland, Birmingham or Chicago)

Per Cent Off List

Machine and carriage bolts:
1/2 in. x 6 in. and smaller... 70 and 10
Larger than 1/2 in. 70 and 5
Lag bolts 70 and 5
Plow bolts, Nos. 1, 2, 3, and 7 heads 70 and 5
Hot-pressed nuts, blank or tapped, square 70 and 5
Hot-pressed nuts, blank or tapped, hexagon 70 and 5
C.p.c. and t. square or hex. nuts, blank or tapped 70 and 5
Semi-finished hexagon nuts, U.S.S. and S.A.E., all sizes 60, 20 and 10
Stove bolts in packages, nuts attached 75
Stove bolts in packages, with nuts separate 75 and 5
Stove bolts in bulk 82 1/2
Tire bolts 50 and 5

On stove bolts freight is allowed to destination on 200 lb. and over.

Large Rivets

(1/2-in. and larger)

Base per 100 Lb.

F.o.b. Pittsburgh or Cleveland...\$3.05
F.o.b. Chicago or Birmingham.. 3.15

Small Rivets

(7/16-in. and smaller)

Per Cent Off List

F.o.b. Pittsburgh 70 and 5
F.o.b. Cleveland 70 and 5
F.o.b. Chicago and Birm'g'm. 70 and 5

Cap and Set Screws

(Freight allowed up to but not exceeding 65c. per 100 lbs. on lots of 200 lb. or more)

Per Cent Off List

Milled cap screws, 1 in. dia. and smaller 80, 10 and 10
Milled standard set screws, case hardened, 1 in. dia. and smaller 75
Milled headless set screws, cut thread 1/4 in. and smaller..... 75
Upset hex. head cap screws U.S.S. or S.A.E. thread, 1 in. and smaller 85
Upset set screws, cut and oval points 75 and 10
Milled studs 65 to 65 and 10

Alloy and Stainless Steel

Alloy Steel Blooms, Billets and Slabs

F.o.b. Pittsburgh, Chicago, Canton, Massillon, Buffalo, Bethlehem.
Base price, \$51 a gross ton.

Alloy Steel Bars

F.o.b. Pittsburgh, Chicago, Buffalo, Bethlehem, Massillon or Canton.
Open-hearth grade, base..... 2.55c.
Delivered price at Detroit is.. 2.70c.

S.A.E. Alloy Differential per 100 lb.

Series Numbers	Alloy Differential per 100 lb.
2000 (1/2% Nickel)	\$0.25
2100 (2 1/2% Nickel)	0.95
2300 (3 1/2% Nickel)	1.50
2500 (5% Nickel)	2.25
3100 Nickel Chromium	0.55
3200 Nickel Chromium	1.35
3300 Nickel Chromium	3.80
3400 Nickel Chromium	3.20
4100 Chromium Molybdenum (0.15 to 0.25 Molybdenum)	0.50
4100 Chromium Molybdenum (0.25 to 0.40 Molybdenum)	0.70
4600 Nickel Molybdenum (0.20 to 0.30 Molybdenum (1.50 to 2.00 Nickel)	1.05
5100 Chromium Steel (0.60 to 0.90 Chromium)	0.35
5100 Chromium Steel (0.80 to 1.10 Chromium)	0.45
5100 Chromium Spring Steel...base	
6100 Chromium Vanadium Bar. 1.10c.	
6100 Chromium Vanadium Spring Steel	\$0.70
Chromium Nickel Vanadium... 1.40	
Carbon Vanadium	0.85

These prices are for hot-rolled steel bars. The differential for most grades in electric furnace steel is 50c. higher. The differential for cold-drawn bars 1/4c. per lb. higher with separate extra. Blooms, billets and slabs under 4x4 in. or equivalent are sold on the bar basis. Slabs with a section area of 16 in. and 2 1/2 in. thick or over take the billet base. Sections 4x4 in. to 10x10 in. or equivalent carry a gross ton price, which is the net price for bars for the same analysis. Larger sizes carry extras.

Alloy Cold-Finished Bars

F.o.b. Pittsburgh, Chicago, Ga. y. Cleveland or Buffalo, 3.05c. base per lb. Delivered Detroit, 3.20c.

STAINLESS STEEL No. 302

(17 to 19% Cr, 7 to 9% Ni, 0.08 to 0.20% C.)

(Base Prices f.o.b. Pittsburgh)

	Per Lb.
Forging billets	19.55c.
Bars	23c.
Plates	26c.
Structural shapes	23c.
Sheets	33c.
Hot-rolled strip	20 1/2 c.
Cold-rolled strip	27c.
Drawn wire	23c.

TOOL STEEL

Base per Lb.

High speed	57 1/2 c.
High carbon chrome	37c.
Oil hardening	21c.
Special	19c.
Extra	15 1/2 c.
Regular	12 1/2 c.

Prices for warehouse distribution to all points on or East of Mississippi River are 2c. a lb. higher. West of Mississippi quotations are 3c. a lb. higher.

British and Continental

BRITISH

Per Gross Ton

f.o.b. United Kingdom Ports

Based on exchange rate as of Aug. 10

Ferromanganese, export	\$45.24
Billets, open-hearth... 29.57 to \$30.83	
Tin plate, per base box	4.77 to 4.80
Steel bars, open-hearth 39.58	
Beams, open-hearth... 38.33	
Channels, open-hearth 39.58	
Angles, open-hearth... 38.33	
Black sheets, No. 24 gage	51.42
Galvanized sheets, No. 24 gage	61.45

CONTINENTAL

Per Metric Ton, f.o.b. Continental Ports

Based on Exchange rate of Aug. 10

Billets, Thomas	\$19.27
Wire rods, No. 5 B.W.G.	36.90
Steel bars, merchant	26.64
Sheet bars	19.68
Plate, 1/4 in. and up	35.42
Plate, 3/16 in. and 5 mm.	34.35
Sheets, 1/4 in.	36.90
Beams, Thomas	25.58
Angles (Basic)	25.58
Hoops and strip base	32.79
Wire, plain, No. 8	44.03
Wire nails	47.15
Wire, barbed, 4 pt. No. 10 B.W.G.	71.74

IRON AND STEEL WAREHOUSE PRICES

PITTSBURGH

	Base per Lb.
Plates	3.25c.
Structural shapes	3.25c.
Soft steel bars and small shapes	3.05c.
Reinforcing steel bars	3.05c.
Cold-finished and screw stock:	
Rounds and hexagons	3.50c.
Squares and flats	3.50c.
Hot rolled strip incl. 3/16 in. thick, under 24 in. wide	3.30c.
Hoops	3.80c.
Hot-rolled annealed sheets (No. 24), 25 or more bundles	3.35c.
Galv. sheets (No. 24), 25 or more bundles	4.05c.
Hot-rolled sheets (No. 10)	3.05c.
Galv. corrug. sheets (No. 28), per square (more than 3750 lb.)	\$3.77
Spikes, large	3.10c.

Per Cent Off List

Track bolts, all sizes, per 100 count	60
Machine bolts, 100 count	65-5
Carriage bolts, 100 count	65-5
Nuts, all styles, 100 count	65-5
Large rivets, base per 100 lb.	\$3.65
Wire, black, soft ann'd, base per 100 lb.	2.90c.
Wire, galv. soft, base per 100 lb.	3.25c.
Common wire nails, per keg	2.35c.
Cement coated nails, per keg	2.35c.

On plates, structurals, bars, reinforcing bars, bands, hoops and blue annealed sheets, base applies to orders of 400 to 9999 lb.

*Delivered in Pittsburgh switching district.

CHICAGO

	Base per Lb.
Plates and structural shapes	3.30c.
Soft steel bars, rounds	3.10c.
Soft steel bars, squares and hexagons	3.25c.
Cold-fin. steel bars:	
Rounds and hexagons	3.65c.
Flats and squares	3.65c.
Hot-rolled strip	3.40c.
Hot-rolled annealed sheets (No. 24)	3.95c.
Galv. sheets (No. 24)	4.65c.
Spikes (keg lots)	3.70c.
Track bolts (keg lots)	4.70c.
Rivets, structural (keg lots)	3.80c.
Rivets, boiler (keg lots)	3.90c.

Per Cent Off List

Machine bolts	*65
Carriage bolts	*65
Lag screws	*65
Hot-pressed nuts, sq. tap or blank	*65
Hot-pressed nuts, hex. tap or blank	*65
Hex. head cap screws	87½
Cut point set screws	75 and 10
Flat head bright wood screws	70
Spring cotters	55
Stove bolts in full packages	70
Rd. hd. tank rivets, 7/16 in. and smaller	57½
Wrought washers	\$4.50 off list
Black ann'd wire per 100 lb.	\$3.95
Com. wire nails, 50 kegs or more	2.40c.†
Cement c'd nails, 50 kegs or more	2.40c.†

On plates, shapes, bars, hot-rolled strip and heavy hot-rolled sheets, the base applies on orders of 400 to 9999 lb. All prices are f.o.b. consumers' plants within the Chicago switching district.

*These are quotations delivered to city trade for quantities of 100 lb. or more. For lots of less than 100 lb., the quotation is 65 per cent off. Discounts applying to country trade are 70 per cent off, f.o.b. Chicago, with full or partial freight allowed up to 50c. per 100 lb.

†Prices for city and suburbs only.

NEW YORK

	Base per Lb.
Plates, ½ in. and heavier	3.50c.
Structural shapes	3.47c.
Soft steel bars, rounds	3.41c.
Iron bars, Swed. charcoal	6.75c. to 7.00c.
Cold-fin. shafting and screw stock:	
Rounds and hexagons	3.96c.
Flats and squares	3.96c.
Cold-rolled; strip, soft and quarter hard	3.36c.
Hoops	3.66c.

Bands	3.66c.
Hot-rolled sheets (No. 10)	3.15c. to 3.41c.
Hot-rolled ann'd sheets (No. 24*)	3.75c. to 3.99c.
Galvanized sheets (No. 24*)	4.10c. to 4.50c.
Long terne sheets (No. 24)	5.25c. to 5.35c.
Armco iron, galv. (No. 24†)	5.65c.
Toncan iron, galv. (No. 24†)	5.65c.
Galvannealed (No. 24†)	5.75c.
Armco iron, hot-rolled annealed (No. 24†)	5.10c.
Toncan iron, hot-rolled annealed (No. 24†)	5.10c.
Armco iron hot-rolled (No. 10†)	4.15c.
Toncan iron, hot-rolled (No. 10†)	4.15c.
Cold-rolled sheets (No. 20) less than 1000 lbs.	4.65c.
Standard quality	5.40c.
Deep drawing	5.40c.
Stretch leveled	5.40c.
SAE, 2300, hot-rolled	6.97c.
SAE, 3100, hot-rolled	5.37c.
SAE, 6100, hot-rolled, annealed	9.57c.
SAE, 2300, cold-rolled	8.03c.
SAE, 3100, cold-rolled, annealed	7.43c.
Floor plate ¼ in. and heavier	5.30c.
Standard tool steel	11.25c.
Wire, black annealed (No. 9)	3.50c.
Wire, galv. (No. 9)	3.85c.
Tire steel, 1 x ½ in. and larger	3.75c.
Open-hearth spring steel	4.00c. to 10.00c.
Common wire nails, base per keg	\$3.21

Per Cent Off List

Machine bolts, square head and nut:	
All diameters	.65 and 10
Carriage bolts, cut thread:	
All diameters	.65 and 10
*No. 28 and lighter, 36 in. wide, 20c. higher per 100 lb.	
†125 lb. and more.	

ST. LOUIS

	Base per Lb.
Plates and struc. shapes	3.55c.
Bars, soft steel (rounds and flats)	3.35c.
Bars, soft steel (squares, hexagons, ovals, half ovals and half rounds)	3.50c.
Cold-fin. rounds, shafting, screw stock	3.90c.
Hot-rolled annealed sheets (No. 24)	4.20c.
Galv. sheets (No. 24)	4.90c.
Hot-rolled sheets (No. 10)	3.40c.
Black corrug. sheets (No. 24)	4.20c.
*Galv. corrug. sheets	4.90c.
Structural rivets	4.00c.
Boiler rivets	4.10c.

Per Cent Off List

Tank rivets, 7/16 in. and smaller	55
Machine and carriage bolts, lag screws, fitting up bolts, bolt ends, plow bolts, hot-pressed nuts, square and hexagon, tapped or blank, semi-finished nuts; all quantities	70
*No. 26 and lighter take special prices.	

PHILADELPHIA

	Base per Lb.
*Plates, ¼-in. and heavier	3.10c.
*Structural shapes	3.10c.
*Soft steel bars, small shapes, iron bars (except bands)	3.15c.
†Reinforc. steel bars, sq. twisted and deformed	2.96c.
Cold-finished steel bars	3.91c.
*Steel hoops	3.55c.
*Steel bands, No. 12 and 3/16 in. incl.	3.30c.
Spring steel	5.00c.
†Hot-rolled anneal. sheets (No. 24)	3.75c.
†Galvanized sheets (No. 24)	4.50c.
*Hot-rolled annealed sheets (No. 10)	3.20c.
Diam. pat. floor plates, ¼ in.	5.05c.
Swedish iron bars	6.25c.

These prices are subject to quantity differential except on reinforcing and Swedish iron bars.

*Base prices subject to deduction on orders aggregating 4000 lb. or over.

†For 25 bundles or over.

†For less than 2000 lb.

CLEVELAND

	Base per Lb.
Plates and struc. shapes	3.41c.
Soft steel bars	3.00c.
†Reinforc. steel bars	2.10c.
†Cold-finished steel bars	3.65c.
Flat-rolled steel under ¼ in.	3.46c.
Cold-finished strip	3.00c.
Hot-rolled annealed sheets (No. 24)	3.91c.
Galvanized sheets (No. 24)	4.61c.
Hot-rolled sheets (No. 10)	3.21c.
Hot-rolled 3/16 in. 24 to 48 in. wide sheets	3.46c.
*Black ann'd wire, per 100 lb.	\$2.85
*No. 9 galv. wire, per 100 lb.	3.20
*Com. wire nails, base per keg	2.30

†Outside delivery 10c. less.

*For 5000 lb. or less.

†Plus switching and cartage charges and quantity differentials up to 50c.

CINCINNATI

	Base per Lb.
Plates and struc. shapes	3.52c.
Bars, rounds, flats and angles	3.32c.
Other shapes	3.47c.
Rail steel reinforc. bars	3.25c.
Hoops and bands, 3/16 in. and lighter	3.57c.
Cold-finished bars	3.87c.
Hot-rolled annealed sheets (No. 24) 25 bundles or more	4.62c.
Galv. sheets (No. 24) 500 lb. or less	4.47c.
Galvanized sheets (No. 24) over 3500 lb.	4.07c.
Hot-rolled sheets (No. 10)	3.32c.
Structural rivets	4.50c.
Small rivets	.55 per cent off list
No. 9 ann'd wire, per 100 lb. (1000 lb. or over)	\$2.88
Com. wire nails, base per keg: Any quantity less than carload	3.04
Cement c'd nails, base 100-lb keg	3.50
Chain, lin. per 100 lb.	3.35

Net per 100 Ft.

Seamless steel boiler tubes, 2-in.	\$20.37
4-in.	48.14
Lap-welded steel boiler tubes, 2-in.	19.33
4-in.	45.32

BUFFALO

	Base per Lb.
Plates	3.48c.
Struc. shapes	3.35c.
Soft steel bars	3.15c.
Reinforcing bars	2.60c.
Cold-fin. flats and sq.	3.70c.
Rounds and hex.	3.70c.
Cold-rolled strip steel	3.19c.
Hot-rolled annealed sheets (No. 24)	4.16c.
Heavy hot-rolled sheets (3/16 in., 24 to 48 in. wide)	5.33c.
Galv. sheet (No. 24)	4.80c.
Bands	3.53c.
Hoops	3.53c.
Heavy top-rolled sheets	3.28c.
Com. wire nails, base per keg	\$2.85
Black wire, base per 100 lb. (2500-lb. lots or under)	4.00
(Over 2500 lb.)	3.90

BOSTON

	Base per Lb.
Beams, channels, angles, tees, zeos	3.54c.
H beams and shapes	3.54c.
Plates—Sheared, tank, and univ. mill, ¼ in. thick and heavier	3.56c.
Floor plates, diamond pattern	5.36c.
Bar and bar shapes (mild steel)	3.45c.
Bands 3/16 in. thick and No. 12 ga. incl.	3.65c. to 4.65c.
Half rounds, half ovals, ovals and bevels	4.70c.
Tire steel	4.70c.
Cold-rolled strip steel	3.245c.
Cold-finished rounds, squares and hexagons	3.90c.
Cold-finished flats	3.90c.
Blue annealed sheets, No. 10 ga.	3.65c.
One pass cold-rolled sheets No. 24 ga.	4.20c.
Galvanized steel sheets, No. 24 ga.	4.00c.
Lead coated sheets, No. 24 ga.	5.85c.

Price delivered by truck in metropolitan Boston, subject to quantity differentials.

DETROIT

Base per Lb.

Soft steel bars	3.19c.
Structural shapes	3.52c.
Plates	3.52c.
Floor plates	5.27c.
Hot-rolled annealed sheets	
(No. 24)*	4.04c.
Hot-rolled sheets (No. 10)**	3.24c.
Galvanized sheets (No. 24)...	4.82c.
Bands	3.49c.
Hoops	3.49c.
†Cold-finished bars	3.74c.
Cold-rolled strip	3.18c.
Hot-rolled alloy steel (S.A.E. 3100 Series)	5.44c.
Bolts and nuts, in cases,	
70 and 10 per cent off list	
Broken cases	70 per cent off

Prices delivered by truck in metropolitan Detroit, subject to quantity differentials covering shipment at one time.

*Base less 0.25c., 3500 lb. and over. Add 0.50c. per hundred lb. for broken bundles.

**Base less 0.25c., 1500 to 3749 lbs.; less 0.50c., 3750 to 7499 lb.; less 0.75c., 7500 lb. and over.

Galvanized and hot-rolled annealed may not be combined to obtain quantity deductions.

Country territory to be equalized on the Chicago plan.

MILWAUKEE

Base per Lb.

Plates and structural shapes..	3.41c.
Soft steel bars, rounds up to 8 in., flats and fillet angles...	3.21c.
Soft steel bars, squares and hexagons	3.36c.
Hot-rolled strip	3.51c.
Hot-rolled sheets (No. 10)...	3.26c.
Hot-rolled annealed sheets (No. 24)	4.06c.
Galvanized sheets (No. 20)	4.76c.
Cold-finished steel bars.....	3.76c.
Cold-rolled strip	3.33c.
Structural rivets (keg lots)...	4.01c.
Boiler rivets, cone head (keg lots)	4.11c.
Track spikes (keg lots)	3.91c.
Track bolts (keg lots)	4.91c.
Black annealed wire	3.40c.
Com. wire nails	2.60c.
Cement coated nails	2.60c.

Per Cent Off List

Machine bolts, carriage bolts and lag screws	70 to 75
Hot-pressed nuts, sq. and hex. tapped or blank (keg lots).....	70

Prices given above are delivered Milwaukee.

On plates, shapes, bars, hot-rolled strip and heavy hot-rolled sheets, the base applies on orders of 400 to 9999 lb. On galvanized and No. 24 hot-rolled annealed sheets the prices given apply on orders of 400 to 1500 lb. On cold-finished bars the prices are for orders of 1000 lb. or more of a size.

ST. PAUL

Base per Lb.

Mild steel bars, rounds	3.35c.
Structural shapes	3.55c.
Plates	3.55c.
Cold-finished bars	3.90c.
Bands and hoops	3.65c.
Hot-rolled annealed sheets,	
No. 24	4.20c.
Galvanized sheets, No. 24.....	4.90c.

On mild steel bars, shapes, plates and hoops and bands the base applies on 400 to 14,999 lb. On hot-rolled sheets, galvanized sheets and cold-rolled sheets base applies on 15,000 lb. and over. Base on cold-finished bars is 1000 lb. and over of a size.

BALTIMORE

Base per Lb.

*Mild steel bars	3.00c.
**Reinforcing bars	2.85c.
*Structural shapes	3.00c.
†Plates	3.00c.
†Hot-rolled sheets, No. 10	3.10c.
†Hot-rolled annealed sheets,	
No. 24	3.60c.
†Galvanized sheets, No. 24....	4.30c.
*Bands	3.20c.
*Hoops	3.45c.
§Cold-rolled rounds	3.73c.
§Cold-rolled squares, hex. and flats	3.73c.
Rivets	4.40c.
Bolts and nuts, per cent off list	
60 and 10	

*Quantity extras per size apply.

†Quantity extras per thickness apply. Hot-rolled quantity extras are: 2000 lb. and over, base: 1500 lb. to 1999 lb. add 15c. per 100 lb.; 1000 lb. to 1499 lb. add 40c.; 0 to 999 lb., add 50c. ‡25 bundles and over, base. For 1 to 9 bundles add 50c. per 100 lbs.; for 10 to 24 bundles add 25c.

§Base for 1000 lb. and over. For 500 to 999 lb. add 25c. per 100 lb.; for 300 to 499 lb. add \$1.00; for 0 to 299 lb. add \$1.75; for combined order under 100 lb. add \$3.00.

**For orders 4000 lb. to 9999 lb. Add 15c. per 100 lb. for orders 2000 to 3999 lb.; add 65c. for orders less than 2000 lb.

CHATTANOOGA

Base per Lb.

Mild steel bars	3.46c.
Iron bars	3.46c.
Reinforcing bars	3.46c.
Structural shapes	3.66c.
Plates	3.66c.
Hot-rolled sheets No. 10.....	3.46c.
Hot-rolled annealed sheets	
No. 24*	3.41c.
Galvanized sheets, No. 24*....	3.96c.
Steel bands	3.71c.
Cold-finished bars	4.281c.

* Plus mill item extra.

MEMPHIS

Base per Lb.

Mild steel bars	3.57c.
Shapes, bar size	3.57c.
Iron bars	3.57c.
Structural shapes	3.77c.
Plates	3.77c.
Hot-rolled sheets, No. 10.....	3.57c.
Hot-rolled annealed sheets,	
No. 24	4.37c.
Galvanized sheets, No. 24.....	4.90c.
Steel bands	3.82c.
Cold-drawn rounds	4.04c.
Cold-drawn flats, squares,	
hexagons	6.04c.
Structural rivets	4.25c.
Bolts and nuts, per cent off list	65
Small rivets, per cent off list.	50

NEW ORLEANS

Base per Lb.

Mild steel bars	3.35c.
Reinforcing bars	3.50c.
Structural shapes	3.55c.
Plates	3.55c.
Hot-rolled sheets, No. 10.....	3.55c.
Hot-rolled annealed sheets,	
No. 24	4.35c.
Galvanized sheets, No. 24....	4.95c.
Steel bands	3.95c.
Cold-finished steel bars	4.30c.
Structural rivets	4.25c.
Boiler rivets	4.25c.
Common wire nails, base per keg	\$2.65
Bolts and nuts, per cent off list	70

PACIFIC COAST

Base per Lb.

	San Francisco	Los Angeles	Seattle
Plates, tank and U. M.	3.25c.	3.60c.	3.65c.
Shapes, standard	3.25c.	3.60c.	3.65c.
Soft steel bars..	3.25c.	3.60c.	3.80c.
Reinforcing bars, f.o.b. cars dock			
Pacific ports..	2.45c.	2.45c.	2.45c.
Hot-rolled annealed sheets (No. 24)	4.20c.	4.15c.	4.50c.
Hot-rolled sheets (No. 10)	3.60c.	3.70c.	3.85c.
Galv. sheets (No. 24 and lighter)	5.00c.	4.40c.	5.10c.
Galv. sheets (No. 22 and heavier)	5.00c.	4.60c.	5.10c.
Cold finished steel			
Rounds	5.95c.	5.85c.	6.25c.
Squares and hexagons	7.20c.	7.10c.	7.50c.
Flats	7.75c.	7.60c.	8.50c.
Common wire nails—base per keg less carload	\$2.90	\$2.90	\$2.90

All items subject to differentials for quantity.

REFRACTORIES PRICES

Fire Clay Brick

Per 1000 f.o.b Works

High-heat duty, Pennsylvania, Maryland, Kentucky, Missouri and Illinois	\$45.00
High-heat duty, New Jersey...	50.00
High-heat duty, Ohio	40.00
Intermediate, Pennsylvania, Maryland, Kentucky, Missouri and Illinois	40.00
Intermediate, New Jersey	43.00
Intermediate, Ohio	35.00
Ground fire clay, per ton	7.00

Silica Brick

Per 1000 f.o.b Works

Pennsylvania	\$45.00
Chicago District	54.00
Birmingham	\$48 to 50.00
Silica cement per net ton	8.00

Chrome Brick

Per Net Ton

Standard f.o.b. Baltimore, Plymouth Meeting and Chester...	\$45.00
Chemically bonded f.o.b. Baltimore, Plymouth Meeting and Chester, Pa.	45.00

Magnesite Brick

Per Net Ton

Standard f.o.b. Baltimore and Chester, Pa.	\$65.00
Chemically bonded, f.o.b. Baltimore	55.00

Grain Magnesite

Per Net Ton

Imported, f.o.b. Baltimore and Chester, Pa. (in sacks).....	\$45.00
Domestic, f.o.b. Baltimore and Chester, in sacks.....	40.00
Domestic, f.o.b. Chewelah, Wash.	22.00

RAW MATERIALS PRICES

PIG IRON

No. 2 Foundry

F.c.b. Everett, Mass.; Bethlehem, Birdsboro and Swedeland, Pa., and Sparrows Point, Md.	\$20.50
Delivered Brooklyn	22.9289
Delivered Newark or Jersey City	21.9873
Delivered Philadelphia	21.3132
F.o.b. Neville Island, Sharpsville and Erie, Pa.; Buffalo; Youngstown, Cleveland, Toledo and Hamilton, Ohio; Detroit; Chicago and Granite City, Ill.	19.50
F.o.b. Jackson, Ohio	21.25
Delivered Cincinnati	19.82
F.o.b. Duluth	20.00
F.o.b. Provo, Utah	17.50
Delivered San Francisco, Los Angeles or Seattle	22.315
F.o.b. Birmingham*	15.50

* Delivered prices on southern iron for shipment to northern points are 38c. a ton below delivered prices from nearest northern basing point on iron with phosphorus content of .70 and over.

Malleable

Base prices on malleable iron are 50c. a ton above No. 2 foundry quotations at Everett, Eastern Pennsylvania furnaces, Erie and Buffalo. Elsewhere they are the same.

Basic

F.o.b. Everett, Mass.; Bethlehem, Birdsboro, Swedeland and Steelton, Pa., and Sparrows Point, Md.	\$20.00
Delivered Boston Switching District	20.50
Delivered Newark or Jersey City	21.4873
Delivered Philadelphia	20.8132
F.o.b. Buffalo	18.50
F.o.b. Neville Island, Sharpsville and Erie, Pa.; Youngstown, Cleveland, Toledo and Hamilton, Ohio; Detroit; Chicago and Granite City, Ill.	19.00
Delivered Cincinnati	18.82
Delivered Canton, Ohio	20.3482
Delivered Mansfield, Ohio	20.8832
F.o.b. Jackson, Ohio	20.75
F.o.b. Provo, Utah	17.00
F.o.b. Birmingham	14.50

Bessemer

F.o.b. Everett, Mass.; Bethlehem, Birdsboro and Swedeland, Pa.	\$21.50
Delivered Boston Switching District	22.00
Delivered Newark or Jersey City	22.9873
Delivered Philadelphia	22.3132
F.o.b. Buffalo and Erie, Pa., and Duluth	20.50
F.o.b. Neville Island and Sharpsville, Pa.; Youngstown, Cleveland, Toledo and Hamilton, Ohio; Detroit; Chicago and Birmingham	20.00
Delivered Cincinnati	21.0807
Delivered Canton, Ohio	21.3482
Delivered Mansfield, Ohio	21.8832

Low Phosphorus

Basing points: Birdsboro, Pa., Steelton, Pa., and Standish, N. Y.	\$24.00
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Gray Forge

Valley or Pittsburgh furnace	\$19.00
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Charcoal

Lake Superior furnace	\$22.00
Delivered Chicago	25.2528

Canadian Pig Iron

Delivered Toronto	
No. 1 fdy., sil. 2.25 to 2.75	\$21.00
No. 2 fdy., sil. 1.75 to 2.75	20.50
Malleable	22.50
Delivered Montreal	
No. 1 fdy., sil. 2.25 to 2.75	\$22.50
No. 2 fdy., sil. 1.75 to 2.25	22.00
Malleable	22.50
Basic	22.00

FERROALLOYS

Ferromanganese

F.o.b. New York, Philadelphia, Baltimore, Mobile or New Orleans.	
Domestic, 80% (carload)	\$75.00

Spiegeleisen

Per Gross Ton Furnace	
Domestic, 19 to 21%	\$26.00
50-ton lots 3-mo. shipment	24.00
F.o.b. New Orleans	26.00

Electric Ferrosilicon

Per Gross Ton Delivered	
50% (carloads)	\$69.50
50% (ton lots)	77.00
75% (carloads)	126.00
75% (ton lots)	130.00

Silvery Iron

Per Gross Ton	
F.o.b. Jackson, Ohio, 6.00 to 6.50%	\$22.75
For each additional 0.5% silicon up to 12%	

The lower all-rail delivered price from Jackson or Buffalo is quoted with freight allowed. Base prices at Buffalo are \$1.25 a ton higher than at Jackson.

Manganese 2 to 3%, \$1 a ton additional. For each unit of manganese over 3%, \$1 a ton additional. Phosphorus 0.75% or over, \$1 a ton additional.

Bessemer Ferrosilicon

F.o.b. Jackson, Ohio, Furnace	
Per Gross Ton	
10.00 to 10.50%	\$27.75
10.51 to 11.00%	28.25
11.01 to 11.50%	28.75
11.51 to 12.00%	29.25
12.01 to 12.50%	29.75
12.51 to 13.00%	30.25
13.01 to 13.50%	30.75
13.51 to 14.00%	31.25
14.01 to 14.50%	31.75
14.51 to 15.00%	32.25
15.01 to 15.50%	32.75
15.51 to 16.00%	33.25
16.01 to 16.50%	33.75
16.51 to 17.00%	34.25

Manganese 2 to 3%, \$1 a ton additional. For each unit of manganese over 3%, \$1 a ton additional. Phosphorus 0.75% or over, \$1 a ton additional.

Base prices at Buffalo are \$1.25 a ton higher than at Jackson.

Other Ferroalloys

Ferrotungsten, per lb. contained W del., carloads	\$1.30
Ferrotungsten, lots of 5000 lb.	1.35
Ferrotungsten, smaller lots	1.40
Ferrochromium, 4 to 6% carbon and up, 65 to 70% Cr per lb. contained Cr delivered, in carloads, and contract	10.00c.
Ferrochromium, 2% carbon	16.50c. to 17.00c.
Ferrochromium, 1% carbon	17.50c. to 18.00c.
Ferrochromium, 0.10% carbon	19.50c. to 20.00c.
Ferrochromium, 0.06% carbon	20.00c. to 20.50c.
Ferrovanadium, del. per lb. contained V	\$2.70 to \$2.90
Ferrocolumbium, per lb. contained columbium, f.o.b. Niagara Falls, N. Y.	\$2.50
Ferrocobaltititanium, 15 to 18% Ti, 7 to 8% C, f.o.b. furnace carload and contract per net ton	\$137.50
Ferrocobaltititanium, 17 to 20% Ti, 3 to 5% C, f.o.b. furnace carload and contract, per net ton	142.50
Ferrophosphorus, electric, or blast furnace material, in carloads, f.o.b. Anniston, Ala., for 18%, with \$3 unitage, freight equalized with Rockdale, Tenn., per gross ton	58.50
Ferrophosphorus, electric, 24%, in carlots, f.o.b. Anniston, Ala., per gross ton with \$3 unitage, freight equalized with Nashville, Tenn.	75.00
Ferromolybdenum, per lb. Mo del.	95c.
Calcium molybdate, per lb. Mo del.	80c.
Silico spiegel, per ton, f.o.b. furnace, carloads	\$38.00
Ton lots or less, per ton	45.50
Silico-manganese, gross ton, delivered	
2.50% carbon grade	85.00
2% carbon grade	90.00
1% carbon grade	100.00

Note: Spot prices are \$5 a ton higher except on 75 per cent ferrosilicon on which premium is \$10 a ton.

ORES

Lake Superior Ores

Delivered Lower Lake Ports	
Per Gross Ton	
Old range, Bessemer, 51.50%...	\$4.80
Old range, non-Bessemer, 51.50%...	4.65
Mesabi, Bessemer, 51.50%...	4.65
Mesabi, non-Bessemer, 51.50%...	4.50
High phosphorus, 51.50%...	4.40

Foreign Ore

C.i.f. Philadelphia or Baltimore

Per Unit	
Iron, low phos., copper free, 55 to 58% dry Spain or Algeria	10.25c.
Iron, low phos., Swedish, average, 68 1/2% iron	10.25c.
Iron, basic or foundry, Swedish, aver. 65% iron	9.50c.
Iron, basic or foundry, Russian, aver. 65% iron	Nominal
Man., Caucasian, washed 52%	26c.
Man., African, Indian, 44-48%	25c.
Man., African, Indian, 49-51%	26c.
Man., Brazilian, 46 to 48 1/2%	24c.

Per Net Ton Unit

Tungsten, Chinese, wolframite, duty paid, delivered, nominal	16.00
Tungsten, domestic, scheelite delivered, nominal	16.00

Per Gross Ton

Chrome, 45% Cr ₂ O ₃ , lamp, c.i.f. Atlantic Seaboard (African)	\$17.50
45 to 46% Cr ₂ O ₃ (Turkish)	\$16.50 to 17.00
48% Cr ₂ O ₃ (African)	20.50
48% min. Cr ₂ O ₃ (Turkish)	19.25
Chrome concentrate, 50% and over Cr ₂ O ₃ , c.i.f. Atlantic ports	22.00
52% Cr ₂ O ₃ (Turkish)	21.75
48 to 49% Cr ₂ O ₃ (Turkish)	19.25

FLUORSPAR

Per Net Ton

Domestic, washed gravel, 85-5, f.o.b. Kentucky and Illinois mines, all rail	\$18.00 to \$20.00
Domestic, barge and rail	19.00
No. 2 lump, 85-5, f.o.b. Kentucky and Illinois mines	20.00
Foreign, 85% calcium fluoride, not over 5% silicon, c.i.f. Atlantic ports, duty paid	21.50
Domestic No. 1 ground bulk, 95 to 98% calcium fluoride, not over 2 1/2% silicon, f.o.b. Illinois and Kentucky mines	35.00

FUEL OIL

Per Gal.

F.o.b. Bayonne or Baltimore, No. 3 distillate	4.25c.
F.o.b. Bayonne or Baltimore, No. 4 industrial	3.75c.
Del'd Ch'go, No. 3 industrial	5.00c.
Del'd Ch'go, No. 5 industrial	3.77c.
Del'd Cleve'd, No. 3 distillate	5.87 1/2c.
Del'd Cleve'd, No. 4 industrial	5.75c.
Del'd Cleve'd, No. 5 industrial	5.00c.

COKE AND COAL

Coke

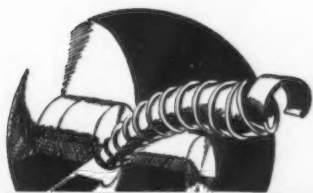
Per Net Ton

Furnace, f.o.b. Connellsville, Prompt	\$3.65 to \$3.75
Foundry, f.o.b. Connellsville, Prompt	4.00 to 5.75
Foundry, by-product, Chicago ovens	9.00
Foundry, by-product, del'd New England	11.50
Foundry, by-product, del'd Newark or Jersey City	9.65
Foundry, by-product, Philadelphia	9.38
Foundry, by-product, delivered Cleveland	9.75
Foundry, by-product, delivered Cincinnati	9.50
Foundry, Birmingham	6.50
Foundry, by-product, St. Louis, f.o.b. ovens	8.00
Foundry, from Birmingham, f.o.b. cars docks, Pacific ports	14.75

Coal

Per Net Ton

Mine run steam coal, f.o.b. W. Pa. mines	\$1.50 to \$1.75
Mine run coking coal, f.o.b. W. Pa.	1.75 to 1.90
Gas coal, 1/4-in. f.o.b. Pa. mines	2.00 to 2.25
Mine run gas coal, f.o.b. Pa. mines	1.80 to 2.00
Steam slack, f.o.b. W. Pa. mines	1.00 to 1.25
Gas slack, f.o.b. W. Pa. mines	1.20 to 1.45



THIS WEEK'S MACHINE ...TOOL ACTIVITIES...

... Grinder prices are stepped up.

... Mid-western buying is cautious.

... Miller orders feature foreign demands.

By L. M. WAITE

IN line with other machine tool price advances, makers of grinders have quite generally announced increases, effective as of Aug. 1. A large volume of business resulted as the deadline was approached. Several orders for large grinding machines were included.

Cincinnati

A spurt in foreign demand for milling machinery featured the local market the past week. While total quantities were not disclosed, the orders consisted of multiple units in excess of two. This ordering offset an easing of demand in other quarters and sustained average bookings at about the level of a week ago. Planer builders report no new business, but contract work remains steadily good. Drilling machinery, while in demand, tends quiet. Other lines hold recent gains.

Several plants are running three shifts, while others adhere to full-day operations.

New York

Distributor reaction to July sales and inquiries, as expressed by both dealers and direct representatives, is that the industry will record on order books the best summer buying that the territory has yet shown. Already, in several instances, August has approached July totals. One dealer reports July as leading other 1936 months in total sales. Another advises that all sales personnel is participating in order volume quite regardless of territorial allotment. No large orders are recorded. New Jersey and nearby New York state turned in splendid grinder business late in July under stimulation of price advances.

Pittsburgh

Inquiries have picked up greatly over the past few weeks. While for some time askings have been on individual machines, list inquiries are now appearing. Orders have shown a good improvement. Verbal orders to go ahead in a number of recent instances have served to gain a week on delivery. Producers of steel mill equipment are

extremely busy with one large maker having a backlog of approximately \$10,500,000, necessitating three-shift plant operation. Two builders have booked orders for a cold reducing tin mill and accessories to be installed at Gary, Ind.

Boston

Westinghouse buying activity at Springfield, Mass., is highly competitive, with reciprocity a factor. Throughout the territory individual machine

orders continue to be picked up in comparatively satisfactory number.

Philadelphia

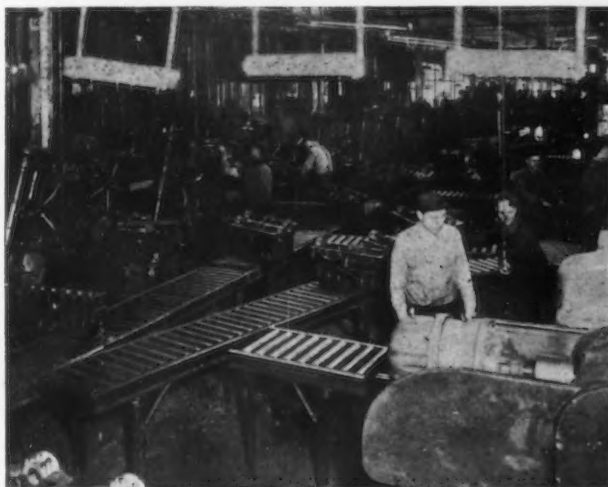
Orders for three large roll grinders have been placed by a leading steel company. Pending grinder proposals were brought to a head by price advances and served to effect an unexpected total of July orders. Several decisions not to delay lathe and turret lathe purchases longer have helped along the total of the first two weeks of August. Decisions on other outstanding proposals are being counted on to supply a good start in September.

Chicago

Early August sales are somewhat spotty and consensus among dealers is that sales for the month will fall below the July total. Active proposals are in excellent volume and the outlook for September is reported as good.

Agricultural implement manufacturers continue to buy equipment as needed, but are moving cautiously.

An interesting phase of the present situation is that users are, wherever possible, holding to standard types of machines. In the 1928 and 1929 bulge much special equipment was ordered. Now, however, buyers are rather uncertain as to anticipated buying for line production and are favoring standard equipment which feature job flexibility.



Ingenuity OR ENGINEERING?

The application of the *Continuous Flow Principle* in handling materials frequently calls for as much ingenuity as engineering. Mathews engineers have two important resources to draw from: First, their diversified industrial experience, and secondly, the fact that Mathews manufactures practically every type of conveyor, permits the selection of types that offer the best solution. The book, "Problems Solved with Mathews Conveyor Systems," will make this clear. Write for it.

MATHEWS CONVEYER COMPANY
San Francisco, Calif. ELLWOOD CITY, PENNA. Port Hope, Ont., Can.



PLANT EXPANSION AND EQUIPMENT BUYING

... Chevrolet Motor Co., Tarrytown, N. Y., has approved plans for additions and improvements costing \$350,000 with equipment.

o o o

... Universal Atlas Cement Co., Hudson, N. Y., plans an expenditure of \$700,000 for mill expansion and equipment.

◀ NORTH ATLANTIC ▶

Texas Co., 135 East Forty-second Street, New York, has approved plans for one-story plant adjoining oil refinery at Lockport, Ill., for manufacture of roofing products, using by-products from refinery as raw material. Project will be carried out in connection with expansion and improvements in refinery at that location, on which work has been started, primarily for increased production of gasoline from crude oil. Entire project will cost close to \$1,000,000, of which over \$500,000 will be expended for equipment.

New York Power & Light Corp., 126 State Street, Albany, N. Y., plans expansion and modernization in local Riverside steam-operated electric power plant, including additional equipment. Cost over \$100,000 with machinery.

Chevrolet Motor Co., Tarrytown, N. Y., has approved plans for two one-story additions to assembling works; also for expansion and improvements in Fisher Body Division, including new equipment. Entire project will cost about \$350,000.

Bureau of Supplies and Accounts, Navy Department, Washington, asks bids until Aug. 18 for 20 electric arc welding sets (Schedule 8585); until Aug. 25, seamless steel tubing (Schedule 8582) for Brooklyn Navy Yard.

Joseph Turner & Co., 500 Fifth Avenue, New York, industrial chemicals, have purchased about one acre at Ridgefield, N. J., for one-story plant, 76 x 180 ft., primarily for storage and distribution, on which superstructure will begin soon. Cost over \$40,000 with equipment.

Construction Service, Veterans' Administration, Washington, asks bids until Sept. 1 for additions to steam power plant at institution at Northport, L. I., including boiler units and other steam power equipment. Work will be carried out in connection with other expansion at that place, for which bids will be received at same time.

Carbide & Carbon Chemicals Corp., 30 East Forty-second Street, New York, has acquired tract, 400 x 800 ft., near Catlettsburg, Ky., for new plant, comprising several one-story units, for conversion of natural gas into liquid form, for use at company plant at Charleston, W. Va. Cost close to \$1,000,000 with machinery.

Superintendent of Lighthouses, St. George, Staten Island, New York, asks bids until Aug. 22 for 150 electric marine flasher mechanisms (Proposal 51850); until

Aug. 24 for 150 automatic electric lamp changers (Proposal 51860).

Universal Atlas Cement Co., Hudson, N. Y., with headquarters at Chicago, will take bids soon for additions to mill for expansion in production, storage and distribution. Cost over \$700,000 with machinery. Company is a subsidiary of United States Steel Corp.

Garrett & Co., Inc., 882 Third Avenue, Brooklyn, wines and liquors, has leased building near Fort McPherson, Atlanta, Ga., totaling about 35,000 sq. ft. floor space, and will remodel for branch winery. Cost about \$50,000 with equipment.

Wallace & Tiernan Co., Inc., 11 Mill Street, Belleville, N. J., manufacturer of liquid chlorine and ammonia control equipment, parts, etc., has plans for two one-story additions, totaling about 75,000 sq. ft. floor space. Cost over \$130,000 with machinery. **Fletcher-Thompson, Inc.**, 1336 Fairfield Avenue, Bridgeport, Conn., is architect and engineer.

P. Ballantine & Sons, 57 Freeman Street, Newark, have let general contract to **Turner Construction Co.**, 420 Lexington Avenue, New York, for three-story addition to brewery. Cost close to \$75,000 with equipment. **J. S. Shanley**, 33 Washington Street, Newark, is architect.

Bureau of Supplies and Accounts, Navy Department, Washington, asks bids until Aug. 18 for one motor-driven honing machine, with one set extra equipment (Schedule 8539), for compressor-type boiler tube-cleaning outfit (Schedule 8565) for Philadelphia Navy Yard.

Carpenter Steel Co., West Bern Street, Reading, Pa., manufacturer of steel forgings, stainless iron and steel products, etc., has let contracts for two one-story additions to **L. H. Focht & Son, Inc.**, and **Reading Contracting Co.**, both Reading. Both units will cost over \$100,000 with equipment.

◀ BUFFALO DISTRICT ▶

Aluminum Co. of America, Inc., Canal Basin, Niagara Falls, N. Y., will modernize one of main units known as Works No. 3, idle for several years, with installation of considerable new equipment to replace present obsolete machinery. Main offices of company are in Pittsburgh.

National Paper Products Co., Carthage, N. Y., manufacturer of tissue and other paper stocks, has asked bids on general contract for one-story addition, 225 x 335

ft. Cost over \$175,000 with machinery. **C. A. Grondona** is general manager.

◀ NEW ENGLAND ▶

Armour & Co., 21 South Market Street, Boston, meat packer, headquarters in Chicago, have let general contract to **Tredennick-Billings Co.**, 10 High Street, Boston, for two-story plant on Columbus Avenue, Boston, 135 x 200 ft., including power house, service and garage building for company cars and motor trucks. Cost about \$400,000 with equipment.

Bureau of Supplies and Accounts, Navy Department, Washington, asks bids until Aug. 18 for 39 motorized speed reducers for Newport, R. I., Navy Yard (Schedule 8549).

Farrel-Birmingham Co., Inc., Ansonia, Conn., manufacturer of machinery and parts, castings, etc., has let general contract to **Mariani Construction Co.**, 222 Forbes Avenue, New Haven, Conn., for one-story addition, 60 x 200 ft., for storage and distribution. Cost over \$40,000 with equipment.

Pitney Bowes Postage Meter Co., Pacific Street, Stamford, Conn., manufacturer of machines for affixing postage stamps, etc., has let general contract to **Turner Construction Co.**, 420 Lexington Avenue, New York, for two-story addition. Cost about \$50,000 with equipment. **H. Chapman**, 95 Hope Street, is architect.

Merrimac Chemical Co., Everett, Mass., has let general contract to **William M. Bailey Co.**, 88 Broad Street, Boston, for two and three-story and basement addition, 50 x 125 ft. Cost about \$85,000 with equipment. Company is a subsidiary of **Monsanto Chemical Co.**, St. Louis.

◀ SOUTH ATLANTIC ▶

Modern Engineering Co., 238 South Front Street, Memphis, Tenn., manufacturer of welding and cutting apparatus, etc., has approved plans for one-story factory branch, storage and distributing plant on **Hutchison Island**, Savannah, Ga. Cost about \$30,000 with equipment.

Town Council, Washington, N. C., plans extensions and improvements in municipal electric power plant, including new equipment. Cost about \$64,000. Financing has been arranged through Federal aid.

State Rural Electrification Authority, 1539 Main Street, Columbia, S. C., asks bids until Sept. 1 for 210 miles of electrical distributing lines for rural electrification in Greenville, Florence, Newberry, Spartanburg, Hampton and other areas, with service facilities. Cost over \$200,000.

◀ SOUTH CENTRAL ▶

General Distillers Corp. of Kentucky, Inc., Louisville, has let general contract to **H. G. Whittenberg**, 3133 South Third Street, for five-story storage and distributing plant, 107 x 165 ft. Cost close to \$100,000 with equipment.

United States Engineer Office, First District, New Orleans, asks bids until Aug. 18 for wire rope and steel balls (Circular 29).

Bruckmann Brewing Co., Ludlow Street and Central Parkway, Cincinnati, has taken option on property at Lexington, Ky., as site for new multi-story brewery. Cost over \$85,000 with equipment.

City Council, Columbus, Miss., plans municipal electrical distributing system to use TVA power, with service facilities. Cost about \$280,000. Financing is being arranged through Federal aid. **A. H. Beard Engineering Co.**, 44 South Central Street, St. Louis, is consulting engineer.

J. E. Wathen Distilling Co., Uniontown, Ky., has plans for new distillery, with storage and distributing building, power house and other mechanical divisions. Cost about \$150,000 with equipment. **Walter C. Wagner**, Breslin Building, Louisville, is architect.

United States Engineer Office, Vicksburg, Miss., asks bids until Aug. 20 for two gasoline engine-driven electric generating sets (Circular 28).

Coltexo Corp., Monroe, La., plans new gasoline refinery in Rodessa, La., oil field

district. Plant will be of absorption type, utilizing about 50,000,000 cu. ft. natural gas per day, with compressor station. Cost close to \$175,000 with equipment.

◀ WESTERN PA. DIST. ▶

H. J. Heinz Co., 1062 Progress Street, Pittsburgh, canned food products, has let general contract to Anglin Norcross, Ltd., 57 Bloor Street, West Toronto, Ont., for one-story addition to branch plant at Leamington, Ont., primarily for storage and distribution. Cost close to \$50,000 with equipment. A similar unit will be built later, to cost approximately a like amount.

Superintendent of Industries, United States Northeastern Penitentiary, Lewisburg, Pa., asks bids until Aug. 17 for 25,000 steel oven bolts (Proposal 277).

Magneson Co., 555 South Flower Street, Los Angeles, manufacturer of industrial chemicals, affiliated with Western Clay & Metals Co., same address, plans branch plant at South Charleston, W. Va., adjoining works of Westvaco Chlorine Products Co., which will furnish certain products for new plant. Cost over \$70,000 with equipment.

◀ WASHINGTON DIST. ▶

Division of Purchases and Sales, Department of Commerce, Washington, asks bids until Aug. 17 for steel shelving (Proposal 28160), six galvanized steel latticed obstruction poles, each 82 ft. long (Proposal 28157); until Aug. 28, one taut wire-measuring gear, complete with drum (Proposal 28150).

Corkran, Hill & Co., Union Stock Yards, Baltimore, meat packers, have let general contract to Carl W. Schmidt, Munsey Building, for one-story addition, 100 x 160 ft., and improvements in present plant. Cost close to \$80,000 with equipment. Company is a subsidiary of Swift & Co., Chicago.

General Purchasing Officer, Panama Canal, Washington, asks bids until Aug. 18 for one grinding machine, galvanized wrought iron or steel pipe straps, brass or bronze unions, brass or bronze pipe fittings, malleable iron pipe fittings, cast iron soil pipe fittings, split-ring extension pipe hangers, galvanized malleable iron unions, flanged unions, globe valves, throttle valves, bibb cocks, brass steam cocks, one steel rolling door and other equipment (Schedule 3171).

Division of Purchase, Sales and Traffic, Department of Agriculture, Washington, asks bids until Aug. 18 for two V-belt-driven type air compressors for Fort Worth and Waco, Tex. (Proposal 6651).

Bureau of Supplies and Accounts, Navy Department, Washington, asks bids until Aug. 18 for 10 ventilation blowers for general use on shipwork (Schedule 8564) for Portsmouth Navy Yard; one motor-driven fuel oil pump (Schedule 8543) for Sewall's Point yard; one motor-driven 50-ton pipe-bending hydraulic press (Schedule 8532); until Aug. 21, spare parts for airplanes (Schedule 900-9877); until Aug. 25, ventilation equipment, centrifugal-type fans, motors and controllers and spare parts (Schedule 8525) for Eastern and Western yards.

◀ SOUTHWEST ▶

Lion Oil Refining Co., El Dorado, Ark., plans addition to lubricating oil division, including new equipment. Cost over \$100,000 with machinery.

Boone County Electric Co-operative, Inc., Columbia, Mo., plans power lines, totaling over 50 miles, for rural electrification in part of Boone County, including service facilities. Fund of \$65,000 is being arranged through Federal aid. Baumes-McDevitt Co., Railway Exchange Building, St. Louis, is consulting engineer.

Board of Education, 400 North Walnut Street, Oklahoma City, Okla., plans manual training department in new two-story and basement high school at Kely Avenue and Thirty-second Street. General contract has been let to Tankersley Construction Co., Wells-Roberts Building. Cost about \$300,000. Layton & Forsyth, Braniff Building, are architects.

Board of Public Service, City Hall, St. Louis, asks bids until Sept. 8 for equipment for power house at Homer G. Phillips City Hospital (Contract No. 4834). Cost about \$55,000.

Public Works Department, City Hall, Kansas City, Mo., plans underground service, repair and garage building between Oak and Locust Streets, 200 x 250 ft., for municipal cars and motor trucks. Cost about \$500,000. Wight & Wight, First National Bank Building, are architects.

Waggoner Refining Co., Vernon, Tex., plans expansion and improvements in oil refinery at Electra, Tex., including new units and equipment. Cost close to \$100,000 with machinery. Award has been made to Universal Oil Products Co., 310 South Michigan Avenue, Chicago, for modernization of gasoline refining division.

Belfalls Light & Power Co., Bartlett, Tex., has arranged Federal financing in amount of \$450,000 for new steam-electric generating plant and about 300 miles of electric power lines in parts of Bell, Miami and Falls counties for rural electrification, including service facilities. Work will begin soon.

◀ OHIO AND INDIANA ▶

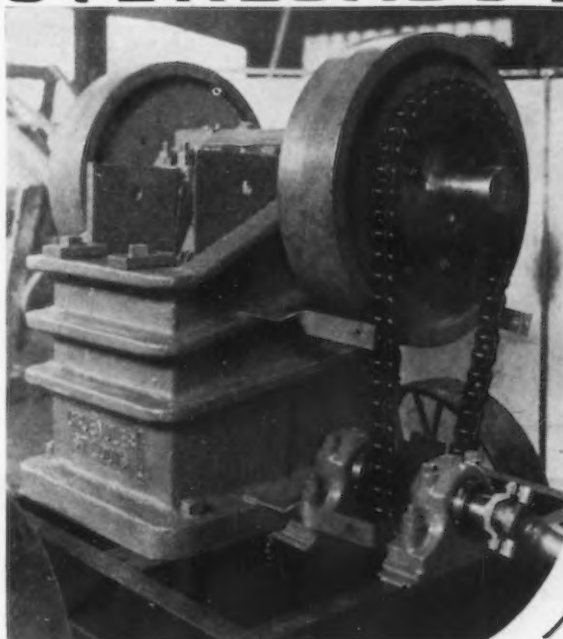
W. J. Schoenberger Co., 8810 Harvard Avenue, Cleveland, manufacturer of valves, parts and other engineering specialties, has let general contract to Peck & Udell Construction Co., 2341 Carnegie Avenue, for two one-story additions, 40 x 100 ft. and 70 x 80 ft., and two-story structure, 30 x 50 ft., including boiler house, part of units for storage and distribution. Cost over \$80,000 with equipment. Christian, Schwarzenberg & Gaede, 1836 Euclid Avenue, are architects.

Hobart Brothers, Troy, Ohio, manufacturers of electric welding equipment, paint-spraying appliances, etc., have approved plans for two-story addition, 53 x 100 ft. Cost over \$35,000 with equipment.

H. H. Meyer Packing Co., 2115 Linn Street, Cincinnati, meat packer, has plans for three-story and basement addition. Cost over \$60,000 with processing and other equipment.

Lackner Co., York Street and Western Avenue, Cincinnati, manufacturer of signs and displays, will take bids at once on

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general contract for two and one-half story and basement plant, 100 x 150 ft. Cost over \$50,000 with equipment. J. R. Biedinger, Traction Building, is consulting engineer.

American Coach & Body Co., 3809 Clark Avenue, S. W., Cleveland, manufacturer of special bodies for automobiles and trucks, transmission equipment, etc., has let general contract to H. E. Klefman Co., 3404 Lorain Avenue, for remodeling three-story building, 168,000 sq. ft. floor space, at East Ninety-third and Quincy Streets, recently acquired for new plant. Entire project will cost over \$85,000 with equipment.

Contracting Officer, Materiel Division, Army Air Corps, Wright Field, Dayton, Ohio, asks bids until Aug. 18 for 500 drills and about 1000 chisels (Circular 73); until Aug. 19, 60,000 instrument-mounting self-locking nuts (Circular 51); until Aug. 21, three aerial navigation light tower assemblies (Circular 60); 14 portable flotation gears (Circular 46); until Aug. 24, fuel pumps, complete with balanced relief valve and by-pass valve (Circular 62); 150 temperature gage assembly-carburetors and 150 gage assemblies for oil temperature (Circular 55).

Board of Public Works, Portland, Ind., has engaged Bevington-Williams, Inc., Indiana Pythian Building, Indianapolis, consulting engineer, to draw plans for municipal power plant extensions and improvements, to include installation of 3500-kw. turbo-generator unit and accessory equipment. Fund of \$192,000 has been secured through Federal aid.

Coca Cola Bottling Works, Bedford, Ind., has acquired site at Seventeenth and H Streets for two-story mechanical-bottling plant, 60 x 150 ft., with storage and distributing facilities. Cost about \$45,000 with equipment.

◀ MICHIGAN DISTRICT ▶

Barkley-Grow Aircraft Corp., Detroit, recently organized by Harold B. Grow, 2017 Penobscot Building, and associates, with capital of \$750,000, has taken over former hangar of Schlee-Brock Co., at Detroit municipal airport, for production of all-metal light type airplanes, light steel propellers and other aircraft parts. Mr. Grow will be president of company; A. S. Barkley, vice-president, and Robert R. Stotzer, secretary-treasurer. Company is

arranging financing to total about \$100,000 for immediate operations.

Kelsey-Hayes Wheel Co., 3600 Military Avenue, Detroit, has asked bids on general contract for one-story foundry addition and improvements in present unit; also for addition to power house and installation of equipment. Entire project will cost over \$60,000. Giffels & Vallet, Inc., Marquette Building, is consulting engineer.

Eaton Mfg. Co., 739 East 140th Street, Cleveland, manufacturer of automobile equipment, has approved plans for expansion and improvements in bumper manufacturing works at Jackson, Mich., including additional equipment. Cost about \$40,000 with machinery. Company will also carry out expansion in stamping division, removing plant at 9771 French Road, Detroit, to modernized branch works at Massillon, Ohio, where capacity will be increased.

Hayes Body Corp., Grand Rapids, Mich., manufacturer of steel automobile bodies, plans expansion for production of new type of motor house trailer, with steel chassis, body frame and sides. Manufacturing division will be arranged at local plant to go into production in fall. Company is considering resumption of operations at branch plant at Ionia, Mich., closed for several years, as output of new trailer is expanded.

◀ MIDDLE WEST ▶

Gits Brothers Mfg. Co., 1846 South Kilbourn Avenue, Chicago, manufacturer of oil cups and kindred engineering products, has let general contract to Robert G. Regan Co., 228 North LaSalle Street, for one-story addition, 75 x 150 ft. Cost about \$45,000 with equipment.

Revere Copper & Brass, Inc., 2200 North Natchez Avenue, Chicago, manufacturer of metal castings and other metal products, has let general contract to Dahl & Stedman Co., 11 North LaSalle Street, for two additions, one and two stories, 60 x 100 ft., for expansion in foundry. Cost about \$50,000 with equipment. William F. Ehmman, Monroe Building, is architect.

Village Council, Hopkins, Minn., is arranging financing for \$217,500 through Federal aid for new municipal electric power plant and distributing system. Diesel engine-generating units and auxiliary equipment will be installed. Bond

issue will be carried out to provide funds in about one-half required sum. Power Engineering Co., Metropolitan Life Building, Minneapolis, is consulting engineer.

Gardner-Denver Co., Williamson Street, Quincy, Ill., manufacturer of drilling machinery, rock drills and other heavy equipment, has let general contract to Menke Stone & Lime Co., Quincy, for one-story foundry addition, 90 x 340 ft. Cost close to \$150,000 with equipment. Frank D. Chase, Inc., 307 North Michigan Avenue, Chicago, is architect and engineer. Company has arranged financing through sale of block of stock.

Board of Education, Bozeman, Mont., plans manual training department in new two-story and basement high school, for which bids will be asked soon on general contract. Fund of \$452,700 has been arranged through Federal aid. Fred F. Willson, Gallatin Building, is architect.

Bureau of Reclamation, Denver, asks bids until Aug. 27 for two vertical-shaft 15,000-hp. hydraulic turbines with accessories, two governors with pumping equipment for regulating speed of turbines noted, and for two 12,000-kva. vertical-shaft electric generator units with auxiliary equipment for installation in Seminole power plant, Casper-Alcova project, Casper, Wyo. (Specifications 691).

Shallcross Controls, Inc., Milwaukee, specializing in manufacture of blast furnace heat controls and electrically operated pressure controls, has moved plant and office from 3707 North Richards Street to 121 North Broadway for increased capacity.

Grob Brothers, South Ninety-seventh Street and West National Avenue, West Allis, Milwaukee, contemplate erection of new machine shop, 48 x 128 ft., one-story, at location to be announced later. Company manufactures power filling machines and other special metal-working tools.

Beta Realty Co., Milwaukee, has placed contracts for addition, 54 x 100 ft., to pattern shop of former Kemp Smith Mfg. Co. milling machine plant at 5325 West Rogers Street, to be occupied under lease by Blackhawk Mfg. Co., 121 North Broadway, manufacturer of lifting jacks, socket wrenches, etc.

Monarch Tool & Die Works, Milwaukee, formerly occupying leased quarters at 815 West Juneau Avenue, has moved into its new plant at North Fraternity Street and East Vienna Avenue, erected and equipped at cost of \$50,000.

◀ PACIFIC COAST ▶

Chevrolet Motor Co., Foothill Boulevard and Sixty-ninth Avenue, Oakland, Cal., will take bids soon for improvements in automobile assembling works at Fourteenth Street and 105th Avenue. Cost over \$90,000 with equipment.

Chaffey High School District, Ontario, Cal., has plans for one-story manual training shop at branch high school at Fontana, Cal., to cost about \$30,000 with equipment. Harry L. Pierce, 1443 Mount Pleasant Drive, Los Angeles, is architect.

Bureau of Supplies and Accounts, Navy Department, Washington, asks bids until Aug. 18 for spare parts for airplanes (Schedule 900-9876) for San Diego Naval Station; motor-driven milling machine (Schedule 8557) for Puget Sound yard; portable triple conductor cable (Schedule 8535) for Mare Island yard; until Aug. 25, hydraulic pumps and motors and spare parts (Schedule 8561) for Mare Island and Portsmouth yards.

H. Moffatt Co., Third and Arthur Streets, San Francisco, meat packer and canner, has let general contract to H. E. Rahlmann, 251 Kearny Street, for one-story and basement plant unit, 75 x 145 ft. Cost about \$60,000 with equipment. James Smith, 251 Kearny Street, is engineer.

Northwest Lead Co., Fourth Avenue South, Seattle, has let general contract to Austin Co., Dexter-Horton Building, for two one-story plant units at Sixteenth Avenue S. W., and West Lander Street, Harbor Island district, 150 x 200 ft., and 75 x 150 ft., respectively. Cost close to \$200,000 with equipment. Company is a subsidiary of Bunker Hill & Sullivan Mining & Concentrating Co., Seattle.

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